The IRON AGE
November 6, 1958 A Chilton Publication The National Metalworking Weekly

Navy Team at Cape Canaveral:

How Metals Control A Satellite's Temperature P. 105

Tool Steel Topics

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

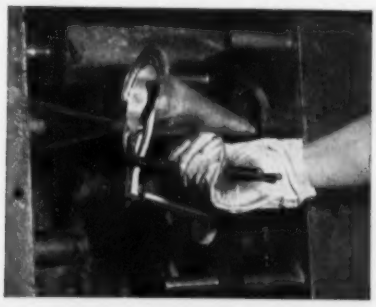
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

Wind shields for 120-mm shells die-cast with Cromo-High V tool steel

Each piece has to be virtually perfect when you're die-casting aluminum wind shields for 120-mm shells. Tooling up for a job like this calls for a hot-work steel that will turn out high-quality castings and at the same time keep production costs low.

Bethlehem has several grades of hot-work tool steel which could be considered for such a highly specialized application.



The die caster weighed all the facts with Bethlehem's local tool steel distributor. Together, they came up with an excellent tool steel for jobs of this sort—Cromo-High V.

Cromo-High V is our 5 pct chrome-moly hot-work tool steel, containing 1 pct vanadium. A grade that has proved its stubborn resistance to wash and erosion, it also has the stamina for long runs.

Cromo-High V is uniformly annealed for easy machining. It has good center density and grain refinement, and is free from porosity. And there's little chance of cleavage cracking when adequate radii are used in the die, and the steel is properly heat treated.

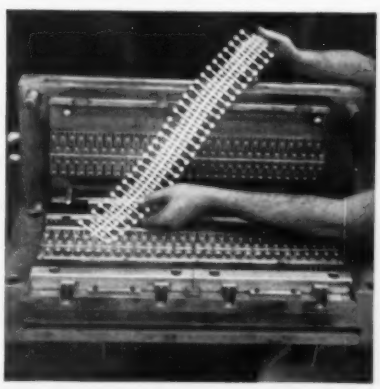
A trial run with Cromo-High V is the best way to learn how good a tool steel it really is. Your local Bethlehem tool steel distributor either has it in stock, or can get it delivered to you quickly.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Air-quenching means longer service life for hot-work tools

Most hot-work tool steels can be hardened by quenching in oil or air. Because of convenience in handling, and to avoid excessive scale, it is often preferable to quench some hot-work tools in oil. However, air-quenching is considered better practice, for it produces lower residual stresses than when tools are liquid-quenched. Since heat-check failures develop from surface stresses which are produced in service, the presence of residual stresses in the tool can lead to premature failure.

Tools having low residual stresses are best suited for long service on hot-work applications. That's why air-quenching is usually best for hot-work tools.



Plastic Beads Molded with Duramold B

Here is an injection mold, with 120 cavities, used by R. A. Koegl Stamp & Die Works, Inc., Hillside, N. J., to produce Plastic Poppit Beads. The steel was supplied by Ackerlind Steel Co., Inc., N. Y. Duramold B is our oil-hardening chromium type of plastic-molding die steel, containing an addition of boron. Its annealed hardness of 100 max Brinell assures ease in cold-hobbing and its alloy content gives it high core strength.

THE IRON AGE
Chestnut and 56th Sts.
Philadelphia 39, Pa., SH 8-2000

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The IRON AGE

November 6, 1958—Vol. 182, No. 19

Digest of the Week in

★Starred items are digested at right.

NEWS ARTICLES

WATCH FOR '60 BOOM

Business Comeback Underway—Tom Campbell says the business recovery will build up to a boom in 1960. This is a rundown on the forces which will generate that boom. P. 61

COAL LABOR RELATIONS

Sound and Sensible—Coal industry labor relations have set an

example for others to follow. Mature attitude by both parties helps meet competition and beat the inflation spiral. P. 66

COST CUTTING

Include Office Force—Checking office efficiency can aid in reducing costs. Some suggestions: Fit personnel needs to business levels, measure work volume. P. 65

STEEL EARNINGS

Gain, But Lag Behind '57 — Third quarter profits for most steel producers were above second quarter results. But nine-month comparisons show earnings this

Metalworking

FAHRENHEIT CHECK: When Navy scientists launched their first satellite (shown), effect of metals on temperature control was of primary interest. Next Navy satellite to go into orbit will continue these tests. It's an area of vital concern to producers of space age hardware. (U. S. Navy photo.) P. 105

year are running behind those of last year. P. 69

FORD PILOT PLANT

For Production Quality—Newest addition to Ford's quality control program is a miniature assembly plant. It helps find production bottlenecks before they happen. P. 78

FEATURE ARTICLES

STEEL STRIP ANNEALING

Liquid Sodium Process—A new process uses liquid sodium as the heating medium in place of conventional furnace equipment. Strip travel is only 30 ft compared to conventional 2100 ft in a furnace. Based in extensive testing, fuel consumption should be reduced as much as 85 pct. P. 108

HOT-CUP COLD-DRAW

For Tight Dimensions—Successful production of 8-in. ordnance shells by a hot-cup cold-draw process marks a giant step forward in the art of cold extrusion of steel. Weight savings occur in both the initial billet and in machining. The method gets closer tolerances. P. 110

FIBER INSULATOR

Blocks High Heat — A new process makes crystals of potassium titanate take the form of very fine fibers. The high reflectance of the fibers scatters infrared rays to withstand 2000°F. P. 112

MOISTURE CONTROL

For Blast Furnace Air?—Some new thoughts on an old controversy bring up the point that proper division of heat between parts of the process is the important factor. Adding water and/or oxygen to blast air helps control furnace but both will add to cost. P. 116

BANDSAW CONTROL

Keeps Blade in Line—A new dynamic control steers bandsaw blades to boost accuracy in cutting tough metals. Longer blade life is one of many added benefits. P. 118

MARKETS & PRICES

CHINESE STEEL

Doubled Tonnage the Aim—Red China is out to double its steel tonnage during 1958. Original production goals of 7.7 million tons have been revised upward to 11.8 million tons this year. P. 70

STAINLESS MARKET

Picking Up—Stainless steel producers are pulling out of the slump with bigger-than-ever plans. Now there is no nickel shortage to hamper promotion efforts. P. 68

FARWEST STEEL USE

Look for Gain in '59 — West Coast steel consumption should rebound to 6.6 million tons next year, Kaiser Steel report predicts. This year the total will be about 6 million tons, down from '57 levels. P. 85

WHERE'S STEEL GOING?

Trend Is Up—Despite the lag in automotive steel buying, the trend in steel is up. December could be the best month of the year. P. 159

SHOP EQUIPMENT

Adds Styling—Shop equipmen: makers are dressing up their products, making them both more functional and more attractive. There's also a growing trend to use of color. P. 160

NEXT WEEK

BUSINESS CHANGE

Eyes on the Future — Modern business is in a constant state of change and planning ahead to meet it is a continuing challenge. Next week, Walther H. Feldmann, president of Worthington Corp., gives his views on this important subject: How to plan for change.

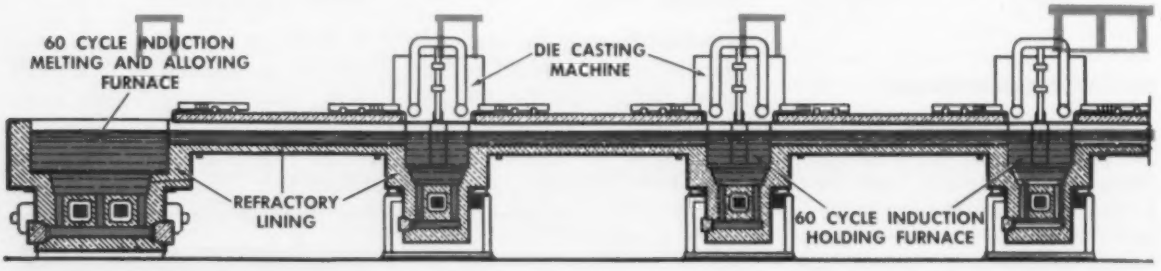
Birthplace of an Automotive Part

BUNKER HILL SPECIAL HIGH GRADE ZINC SLAB

PRODUCED IN THE AJAX FURNACE

High in the mountains of Idaho, the AJAX-TAMA-WYATT 800 kw induction furnace melts 235 tons of electrolytic zinc cathodes day after day. THE BUNKER HILL COMPANY, originators of Special High Grade Zinc, take pride in the purity (99.99+% Zn) of the slab poured from this 60 CYCLE INDUCTION MELTING unit. Such pure metal insures the soundness of the many zinc die castings used in our cars and appliances.

To maintain this purity when remelting the slab for die casting, hundreds of AJAX-TAMA-WYATT furnaces are used today in our busy industrial regions. The diagram below shows a modern zinc die casting line for automotive parts, using a central 60 CYCLE INDUCTION MELTING and alloying furnace, and holding furnaces at each machine. Connecting electric molten metal runways eliminate all metal transfer labor. Unexcelled metal quality, low metal losses, reliability and economy of operation are assured by using 60 CYCLE INDUCTION MELTING throughout.



AJAX USA

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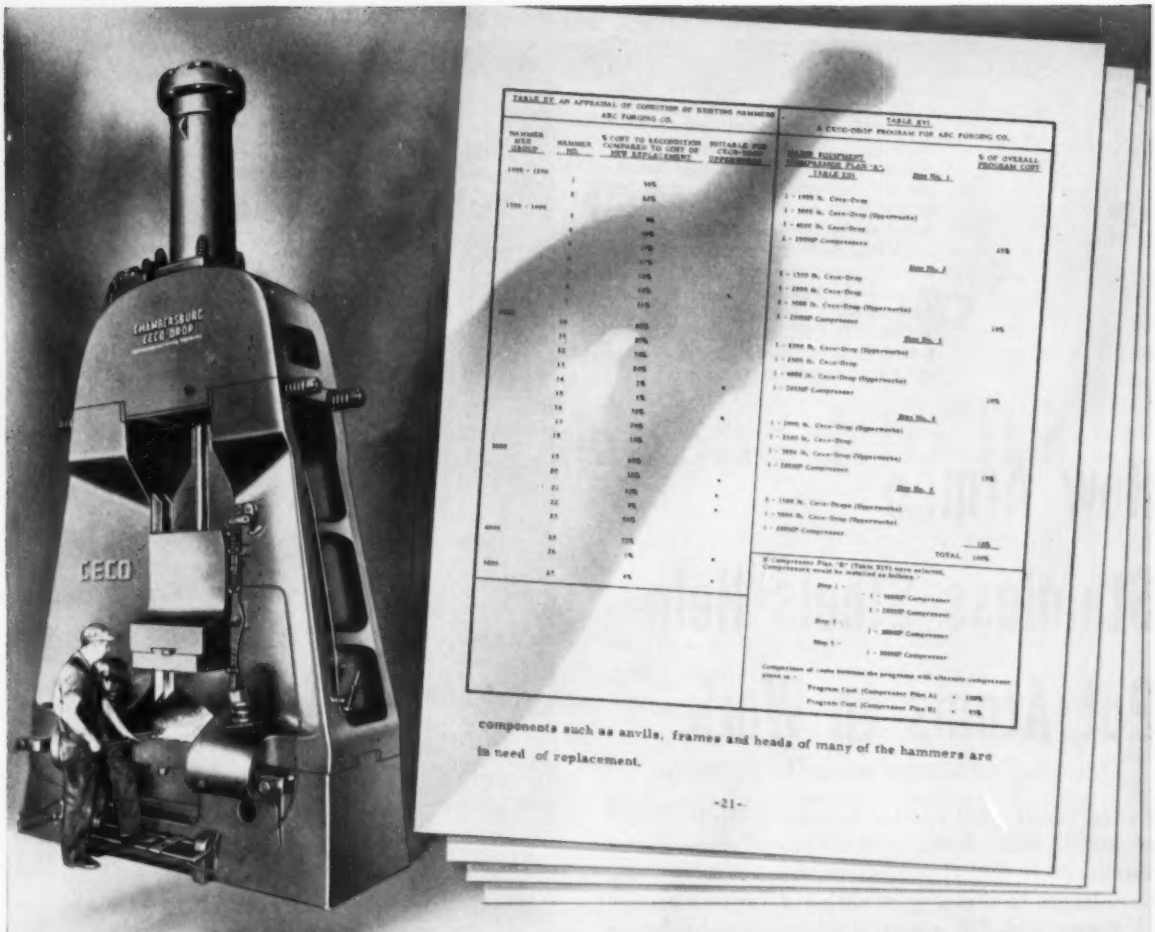
TRENTON 7, NEW JERSEY

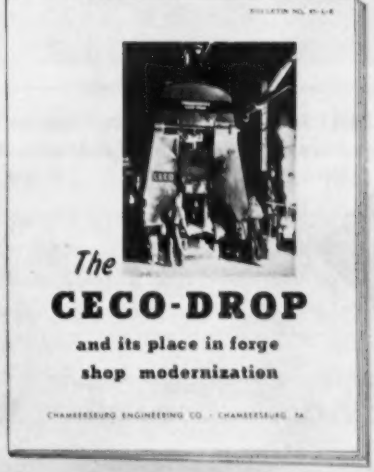
60 CYCLE INDUCTION MELTING

Associated Companies: Ajax Electrothermic Corporation Ajax Electric Company



components such as anvils, frames and heads of many of the hammers are in need of replacement.

-21-

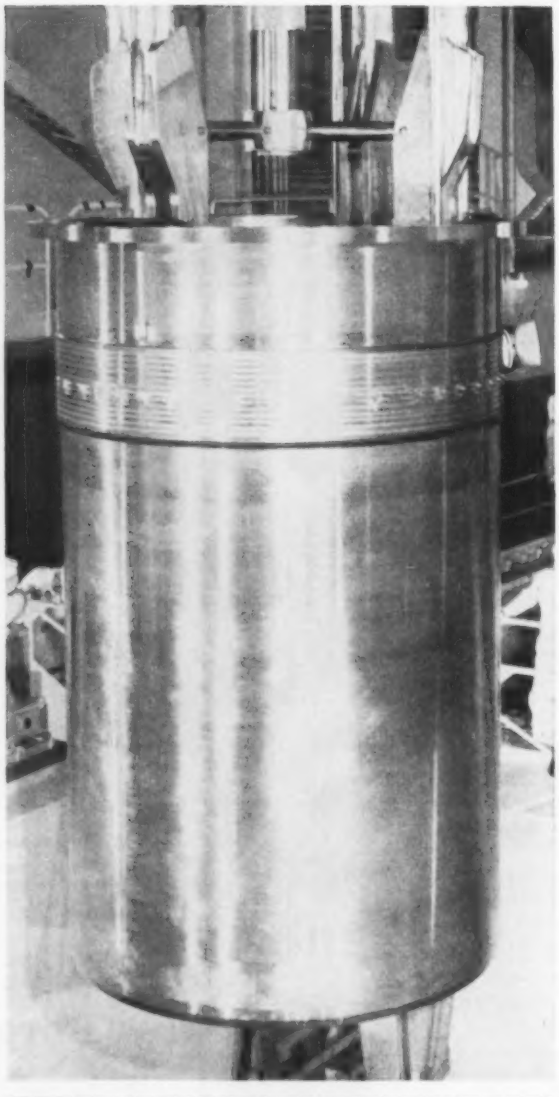


A Realistic Approach to Forge Shop Modernization

During the past few years, mounting competition has caused forge shop managers to seek ways to further increase production and reduce costs. A number have scrapped their old board hammers replacing them with Ceco-Drops, the modern piston-lift gravity-drop hammer. These shops have thus placed themselves in a position to get more business—and they are getting it! ● A wealth of helpful information is available in Chambersburg's new 28 page forge shop modernization bulletin. Based on studies made in prominent forge shops, this publication assists you to formulate your own step-by-step modernization program. Write for a copy today.

CHAMBERSBURG ENGINEERING COMPANY · · CHAMBERSBURG, PA.

Special Armco 17-4 PH Stainless is used in the mechanism that controls nuclear fission in the core of the United States' first full-scale central station nuclear power plant at Shippingport, Pa., which was built as a joint venture of the U. S. Atomic Energy Commission and the Duquesne Light Company. The nuclear portion of the station was designed and developed by Westinghouse Electric Corporation under the direction of and in technical cooperation with the Naval Reactors Branch, Atomic Energy Commission. Duquesne Light built the turbine generator portion of the plant, contributed $5,000,000 toward the construction of the reactor plant and is operating the entire station.



How Armco Stainless Steels Help Put Atoms to Work

Nuclear power plant systems designed to tap the power of peaceful atoms benefit from the unique advantages of stainless steels. Critical parts of reactor control mechanisms, for example, have greater strength and hardness because of Armco 17-4 PH, a special precipitation-hardening stainless grade.

But the jobs performed by other types of high-quality Armco Stainless Steels are vital too in the nuclear power plant. In equipment exposed to radiation, the dense, smooth surfaces of stainless steel are easier to decontaminate. They last longer with little upkeep which cuts down on hazardous contact maintenance.

FOUR-FOLD BENEFITS

Beauty, strength, easy maintenance, durability—all are combined in Armco Stainless Steels. They are four good reasons why products and parts *of all kinds* sell easier, last longer, and work more efficiently when they're made of these bright special steels.

For complete data about top-quality standard and special Armco Stainless Steels, in sheet, strip, plate, bar, and wire, just mail the coupon or call your nearest Armco Sales Office today.

ARMCO STEEL CORPORATION, 2528 Curtis St., Middletown, Ohio

Please send me full information about Armco Stainless Steels in ☐ sheet and strip ☐ bar and wire

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Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Pride of Workmanship What Has Happened to It?

This is no tirade against workers. But honestly, what has become of the fellow who used to take his job seriously? He may still be around but he is greatly outnumbered by those who just put in a day and let it go at that.

This is driven home to you when you go into a store to buy something. Most of the time you sell the item to yourself. Other times you badger the sales people into serving you. Few take time to entice you into an additional purchase. That is almost a lost art these days.

Reflect on your latest paint or carpenter job. Chances are it isn't as good as the one before. What used to be a striving for perfection is today just a job that has to be done—as fast as possible and with little attempt at real workmanship.

Recall the tremendous effort auto firms make to eliminate "lemons": But they do get through and cause customer frustration. They may reflect negative effects of mass or repetitive work but they also are the result of unadulterated sloth. Fortunately all workers are not lazy, else nothing would be done right. For that we can be thankful.

Check with managers who want to help workers move up a notch in their skills. How many volunteers are there who seek to learn more on the job so they may upgrade their pay? Not too many, according to those who know the facts.

What's happened to the fellow who always does a little more than he is "supposed" to do? He may be around but the laggards are influencing him to ask first, "What's in it for me?" That attitude doesn't contribute to well being and satisfaction of a job well done.

Gaze upon the junior executive who is all "het" up because he isn't moving up the ladder fast enough. He becomes impatient, figures he isn't getting a fair break—and finagles himself out of the very promotion he covets.

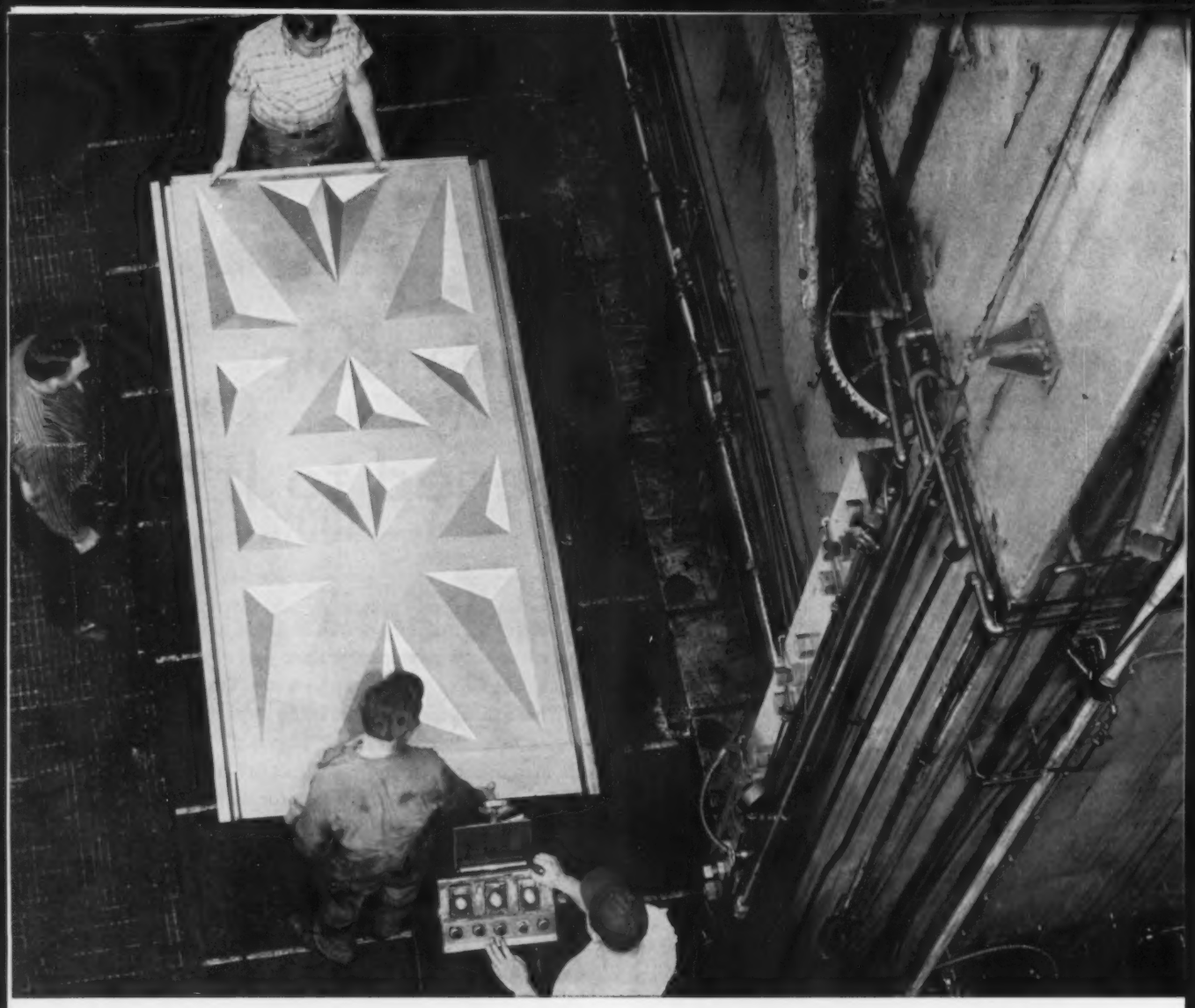
What is causing this loss of pride in workmanship? Working conditions today were undreamed of 25 years ago.

If the worker isn't to blame—and maybe he isn't—then it must be our "way of life." We may be much closer to the point where we do the least for the most we can get.

When pride in what we are doing goes out the window we are losing something which made us—and our country—great. And we are denying ourselves that inner tranquility for which there is no substitute.

Tom Campbell

Editor-in-Chief



Here's where the big jobs get into shape

It takes a big press to stamp out a panel like this 4½ x 9 foot section of stainless steel curtain wall for a building exterior.

COMMERCIAL can and has accurately stamped thousands of curtain wall panels—aluminum, stainless steel, bronze, or steel, with any type of finish—for recently completed modern skyscrapers like the Socony-Mobil Building in New York City, the H. K. Porter Building in Pittsburgh, the Commercial Credit Building in Baltimore, and the Morton Salt Building in Chicago, among others.

Here's a full-time working combination—30 years of skill and experience in forming metals, specialized equipment which includes modern "more-hits-per-hour" 100-ton to 2000-ton presses, and integrated facilities for designing and producing tools and dies—which makes the "tough" stamping jobs routine.

COMMERCIAL produces medium to large custom stampings involving sheets starting at 20 gauge or plates up to ¾-inch thick, diameters from 6 inches to 84 inches, and rectangular shapes 6 inches to 7 feet in width and 6 inches to 15 feet in length. And, it maintains accurate dimensions, preserves original finishes, and keeps unit costs down.

We'd like to prove it to you the very next time you're in the market for a medium to large custom stamping. Our engineers will be glad to work closely with you to help solve your stamping problem. Write to Commercial Shearing & Stamping Co., Dept. K-45, Youngstown 1, Ohio.

Specialists in the shape of things to come
CUSTOM STAMPING • UPSET FORGING • ROTOFORMING

COMMERCIAL
shearing & stamping

Special Alloys

Sir—Will you kindly send me a reprint of "How to Get More for Your Special Alloys Dollar," appearing in the Oct. 16 issue. This article brings together, in quick reference form, information that would take a considerable time to locate. —T. B. Rees, Mgr., Plant Purchases, The M. W. Kellogg Co., Jersey City, N. J.

Space Age Jobs

Sir—Your story "Can Industry Fill Space Age Jobs?" (Oct. 16 issue) was well worth reading. It vividly points up this problem in such fashion that your readers should not only have a better understanding, but be stimulated to well-planned, long-range training action.—W. F. Patterson, Special Asst. to the Secretary, U. S. Dept. of Labor, Washington, D. C.

Attention Museums

Sir — As you probably know, Buck's stoves, ranges and heaters were first manufactured over 100 years ago. We have a number of Buck's catalogs, from 1905 to 1936, most of which are in excellent condition.

Do you know of any individual, company, or museum which might be interested in them? If so, will you please have them communicate with us?

We also would be interested in knowing of anyone who might wish to buy the trademark which has been registered continuously with the U. S. Patent Office since 1908 and currently is filed in and protected by the states of California, Oregon, Washington, Idaho, Utah, Arizona and Nevada.—Mrs. A. Danford, Pres., The Buck's Stove & Range Co., San Francisco, Calif.

"Well, make up your mind, Fenton! What do you want? A raise or a promotion?"

Fastener Locking

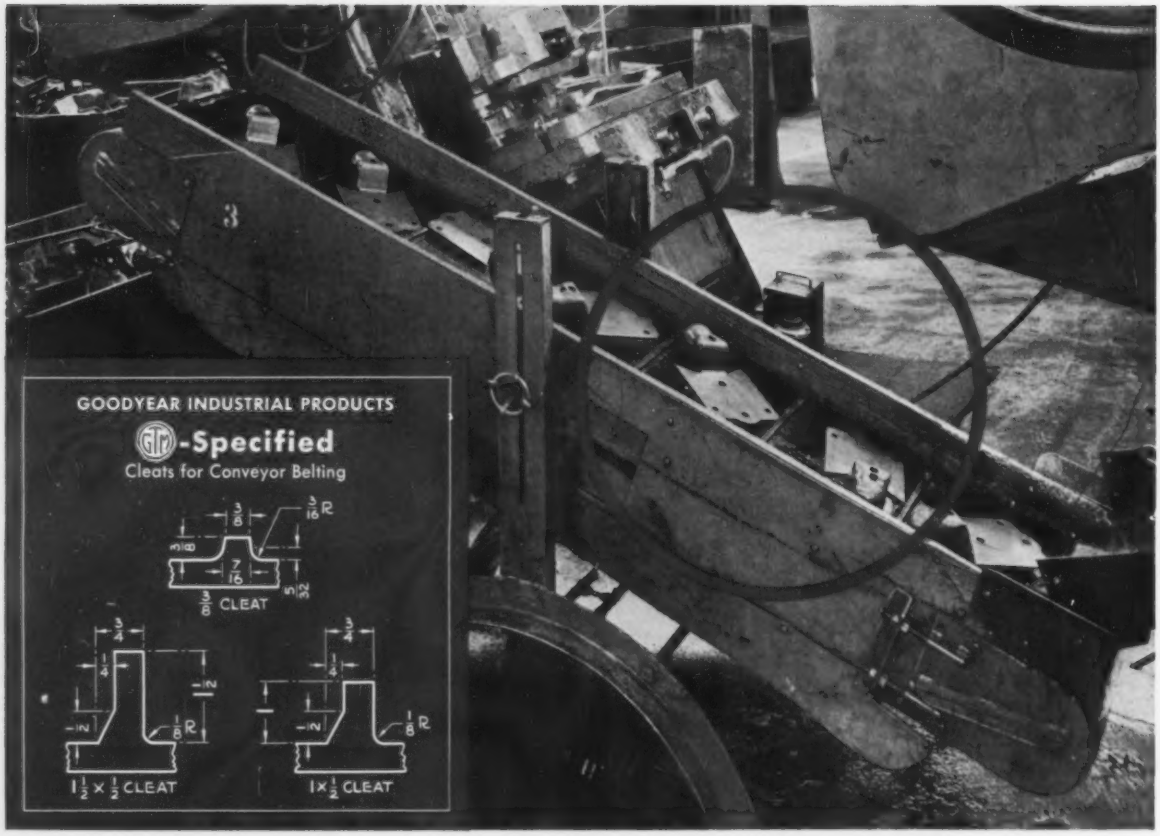
Sir—"Ways to Keep Fasteners Locked," in your Sept. 25 issue, is of interest because it points out ways to lock fasteners which are useful when you are bolting into some soft material.

However, I think you would do your readers an injustice if you did not point out the best way to keep a fastener secure is to properly tighten it in the first place. If a bolt is tightened sufficiently to stretch it so that effective friction is created in the head of the bolt, any locking device is superfluous.—G. A. Remley, Purchasing Research Specialist, Westinghouse Electric Corp., Pittsburgh.

Corrosion Index

Sir—We were very much interested in the Aug. 28 article on "New Corrosion Index Show's Nation's Rust Pattern."

It is noted that reprints are available and we would appreciate your sending about a dozen copies.—H. L. Priestley, Consumer Goods Industry Sect., Marketing Research Div., Electro Metallurgical Co., New York.



They're raising production—and lowering costs by ⅓

Portable conveyors—between production lines on different levels—were a "must" at this Midwestern automotive parts plant. But the specially constructed belts they used soon cut and flaked off. They became oil-soaked and accumulated dust—dirtying the parts. Worse still, they stretched—had to be taken up every 6 weeks. Even then, none lasted more than a year.

Then the G.T.M.—Goodyear Technical Man—recommended Style ORS Cleated Belts. They're made of rubber especially compounded for extreme resistance to oil, cutting and abrasion. And the tough, firm-gripping cleats are molded right into the rubber for durability.

The savings are impressive: The G.T.M.'s less-expensive belts eliminated the need for parts washing. And after 3 straight years of full service—*three times the life of competitive belts*—they're still going strong.

Like to have savings like these on your production lines? The fastest way to find out is to call the G.T.M. He'll be Johnny-on-the-spot if you contact your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

CONVEYOR BELTING BY

GOODYEAR

60th GOODYEAR ANNIVERSARY

THE GREATEST NAME IN RUBBER

What's a Billion?

In a recent editorial Tom Campbell, IRON AGE Editor-in-Chief, asked "Who knows what a billion dollars really is?"

Well, one reader, John A. Kress, president of Whitmier & Ferris Out-Door Advertising Co., certainly did. He sent in a folder put out by his company explaining, "How much is a billion. . . . ? Suppose you and I went into business when Christ was born some 1958 years ago and we had a capital of a billion dollars.

"We managed the business so badly we lost a thousand dollars a day—every day—for 1958 years. Without earning anything on the billion, we would still have eight hundred years to go—losing a thousand dollars a day—before we used up our original capital.

"Or consider this. Our government budget this year is about $72 billion. To give you some idea of that sum—if you turned it into $100 bills, you would have 160 stacks of them—each stack as high as the Empire State Building . . . if you loaded the $72 billion into box cars, it would require 70 cars to hold these $100 bills."

High Finance

Financing a new car isn't difficult. It just seems that way. One woman, however, has come up with the answer according to our Detroit District Editor.

The lady and her husband have a 1957 car. A dealer offers them $2000 for it toward a $3000 new 1958 model, leaving only (?) $1000 to be paid for the new car. That also happens to be the same amount they still owe the finance company on their present car.

The wife is convinced they can get the new car, clear of debt, without paying one extra cent.

"It's simple," she explains patiently to her husband. "We tell the man we accept the deal. He gives us $2000 and we give him our car. We go to the finance company and pay off our $1000 balance. Then we take the other $1000 to the dealer.

"He has our $2000 car and the $1000 in cash and we walk out with a new car. It hasn't cost us a cent. We don't even owe the finance company anything.

"Honestly dear, I don't understand why you keep looking at me like that."

What Price Nepotism?

Excessive use of relatives or family members in one business is usually not considered sound. But Samuel M. Langston Co., Camden, N. J., metal manufacturers, haven't found it so bad.

At Langston 232 of the total work force of 462 employees have close relatives working in the company. There are 44 cases of brothers-in-law alone.

But the firm says its turnover rate is only one-fourth that of similar manufacturers.

"I think you'll like this machine. Not only is it automatic, but it also has power push buttons."

OSTUCO SWAGED TUBING

ups aircraft parts production 82%

Hogged out of a shaped forging, this vital aircraft part in SAE 4140 took 400 minutes to machine.

So the producers, The "Special" Corporation, brought their problem to Ohio Seamless. The solution—an Ostuco Swaged Tube.

Now the chips are down . . . and so is machining time. Down to 220 minutes—*a saving of 180 minutes per part*—with a whopping 82% increase in parts production per workshift.

Chances are Ostuco Tubing can put *you* on velvet, too. The first step is to contact your nearest Ohio Seamless sales office, or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.* AA-8112

Photo: Courtesy The "Special" Corporation, Brooklyn, N. Y.

FIFTY YEARS
OSTUCO
OSTUCO TUBING
1908 1958

OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company • SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

SALES OFFICES: Birmingham, Charlotte, Chicago (Oak Park), Cleveland, Dayton, Denver, Detroit (Huntington Woods), Houston, Los Angeles (Lynwood), Maxton, New Orleans (Chalmette), New York, North Kansas City, Philadelphia (Wynnewood), Pittsburgh, Richmond, Rochester, St. Louis, St. Paul, St. Petersburg, Salt Lake City, Seattle, Tulsa, Wichita. CANADA: Railway & Power Engr. Corp., Ltd. EXPORT: Copperweld Steel International Company, 225 Broadway, New York 7, New York

COMING EXHIBITS

Plastics Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

Power & Mechanical Engineering Show—Dec. 1-5, New York Coliseum. (International Exposition Co., 480 Lexington Ave., New York 17.)

MEETINGS

NOVEMBER

National Tool & Die Manufacturers Assn.—Annual convention, Nov. 5-9, Sheraton Hotel, Philadelphia. Society headquarters, 907 Public Square Bldg., Cleveland.

Steel Founders' Society of America—Technical & Operating conference, Nov. 10-12, Carter Hotel, Celeveland. Society headquarters, 606 Terminal Tower, Cleveland 13.

National Assn. of Aluminum Distributors — Annual meeting, Nov. 10-12, Boca Raton Club, Boca Raton, Fla. Society headquarters, 1900 Arch St., Philadelphia 3.

National Electrical Manufacturers Assn. — Annual meeting, Nov. 10-13, Hotel Traymore, Atlantic City, N. J. Society headquarters, 155 E. 44th St., New York.

Machinery Dealers National Assn.—Fall meeting, Nov. 12, Sheraton-Cadillac Hotel, Detroit. Society headquarters, 1346 Connecticut Ave., N. W., Washington 6, D. C.

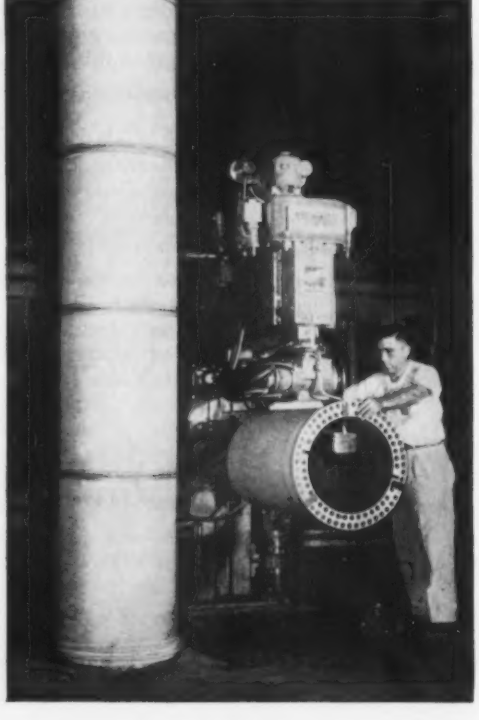
Electric Overhead Crane Institute—Engineering committee meeting, Nov. 13-14, Sherman Hotel, Chicago. Society headquarters, One Thomas Circle, Washington 5, D. C.

American Standards Assn. — National conference on standards, Nov. 18-20, Hotel Roosevelt, New York. Society headquarters, 70 E. 45th St., New York 17.

(Continued on P. 16)

HEAT • WEAR • CORROSION

HAYNES Alloys solve the



HEAT

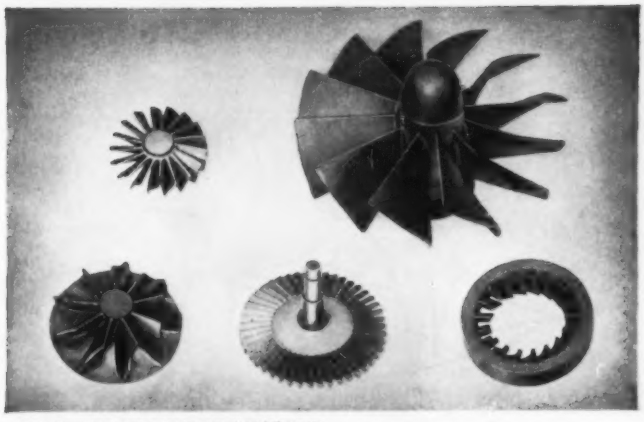
2,000 degree jet blast!

The jet engine tailpipe of the Navy's A4D "Skyhawk" operates at extremely high temperatures. That is just one of the many reasons why this part is made of MULTIMET alloy. This is one of 6 HAYNES wrought alloys that have unusual resistance to high temperatures and oxidation. Because of their exceptional properties, HAYNES alloys are being used extensively in such parts as after-burner components, jet engine tailpipes, turbine blades, and nozzle vanes.

tough problems

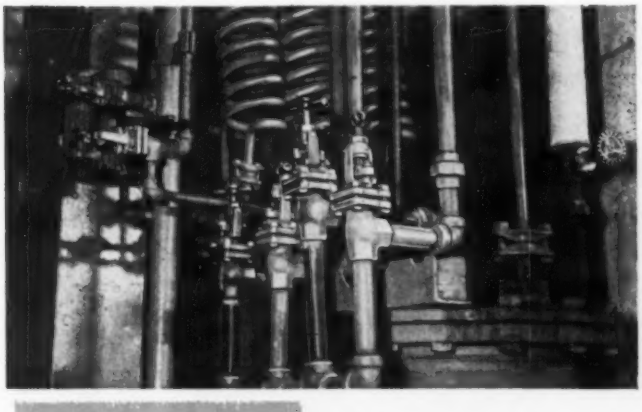
If you have an application that is creating a tough heat, wear, or corrosion-resistance problem, you will find it profitable to check with HAYNES Stellite Company. In practically every industry, you will find HAYNES Alloys doing a better job, lasting longer, reducing maintenance and proving most economical.

Tell us your problem and we will send you descriptive literature on the HAYNES Alloy best suited to solve it. Write HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana.



PRODUCTION Intricate turbine wheels mass-produced.

HAYNES' investment-casting method offers a selection of alloys developed for economical operation over a wide temperature range. Blades and wheels are produced as one integral part to as-cast tolerances that permit operation with unusually fine clearances at high speeds.



CORROSION Withstands corrosive chlorine 10 years!

Handling highly corrosive liquid chlorine was an expensive maintenance problem—until valves made of HASTELLOY alloy C were installed. This is just one of the many corrosive difficulties met by HAYNES Alloys. They also have excellent resistance to hot mineral acids, strongly oxidizing salts, and powerful gaseous oxidants over a wide range of temperatures and concentrations.

HAYNES
ALLOYS
HAYNES STELLITE COMPANY
Division of Union Carbide Corporation

UNION CARBIDE

"Haynes," "Multimet," "Hastelloy" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

EXHIBITS, MEETINGS

(Continued from P. 13)

Manufacturing Chemists' Association, Inc. — Semi-annual meeting and winter conference, Nov. 25, Hotel Statler, New York. Society headquarters, 1625 Eye St., N. W., Washington 6, D. C.

Automotive Tool & Die Manufacturers Assn. — Annual meeting, Nov. 26, Fort Shelby Hotel, Detroit. Society headquarters, 103 Pallister Ave., Detroit.

American Society of Mechanical Engineers — Annual meeting, Nov. 30 - Dec. 5, Statler & Sheraton-McAlpin Hotels, New York. Society headquarters, 29 W. 39th St., New York.

DECEMBER

Electric Overhead Crane Institute —Annual meeting, Dec. 2, Statler Hotel, Washington, D. C. Society headquarters, One Thomas Circle, Washington 5, D. C.

Spring Manufacturers Assn. — Annual meeting, Dec. 2-3, Barbizon-Plaza Hotel, New York. Society headquarters, Box 1440, Bristol, Conn.

The Metallurgical Society of AIME —16th electric furnace steel conference, Dec. 3-5, Hotel Statler, Detroit. Society headquarters, 29 W. 39th St., New York.

American Institute of Chemical Engineers—Annual meeting, Dec. 7-10, Netherland Hilton Hotel, Cincinnati. Society headquarters, 25 W. 45th St., New York.

The Material Handling Institute, Inc.—Annual membership meeting, Dec. 10, Hotel Roosevelt, New York. Society headquarters, One Gateway Center, Pittsburgh.

National Foundry Assn.—Annual meeting, Nov. 20-21, Drake Hotel, Chicago. Society headquarters, 53 W. Jackson Blvd., Chicago.

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tells how Hertz Truck Leasing frees your capital investment in trucks!

Just put your name and address on the back of the postage-free card below. Tear it out. Mail it to us today. And you'll get your free copy of this new Hertz Truck Lease booklet—right away. It's all questions and answers—one right after another. Clear-cut answers on how to free your frozen capital. On how to stop trucking headaches of all kinds, whether you operate one truck or one hundred. Why not send for this new Hertz booklet? It doesn't cost you a penny. There's no obligation. Do it now!

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Hertz leases modern GMC and other rugged trucks kept in top condition to keep them on the move!

Read how to keep your deliveries on time . . . at all times. Send for FREE Hertz Truck Lease booklet!

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- Learn how to get extra trucks—fast—for peak periods
- Learn how to end truck bookkeeping red tape
- Learn how to free executive time for more productive work
- Learn how to release your capital investment in trucks

MAIL THIS POSTAGE-FREE CARD TODAY!

That's all you do to get your *free* copy of the new Hertz booklet. The one booklet on truck leasing that tells you just what's what, that gives you sound answers to your every trucking problem!

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Please send me a free copy of your new question-and-answer booklet on the many advantages of Hertz Truck Lease Service. I understand there is no obligation. We presently own and/or operate_____trucks.

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*Address*_____

*City*_____ *State*_____

Most experienced...by far

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Truck lease service

Claymont's new Fabrications Shop is completely equipped to produce large industrial and structural weldments, as well as job-shop steel plate fabrications of all kinds. Integrated facilities make Claymont a reliable source of quality steel plate and plate products for industry.

by d'Arazien

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FABRICATED STEEL PRODUCTS

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CHECK CLAYMONT FOR—Alloy Steel Plates • Carbon Steel Plates • Stainless-Clad Steel Plates High Strength Low Alloy Steel Plates • CF&I Lectro-Clad Nickel Plated Steel Plates • Pressed and Spun Steel Heads • Manhole Fittings and Covers • Fabricated Steel Products Large Diameter Welded Steel Pipe

PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION • THE COLORADO FUEL AND IRON CORPORATION

Plant at Claymont, Delaware • Sales Offices in all Key Cities

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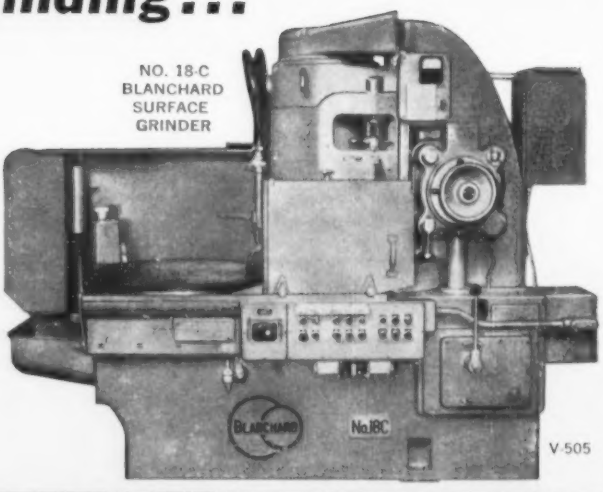
For better, easier grinding...

Whether you're "hogging" off stock from rough castings or precision grinding to a tolerance of ±.0005", you can do it better and easier with the Blanchard No. 18-C Surface Grinder. Once the work is set up, the automatic cycle handles every operation from start to finish. The operator is free to prepare the next load of work or to operate a second No. 18-C Grinder.



Cast Iron Plate. Blanchard ground at the rate of 30 pieces – 60 surfaces – per hour. Stock removal ⅛" each side.

Steel Bars. Blanchard ground at the rate of 48 pieces – 192 surfaces – per hour. Stock .040"-.045" from each side. Limits ±.001" square, flat and parallel.

Hot Rolled Steel Cams. One operator and one No. 18-C Blanchard produce 225 pieces – 450 surfaces – per hour. Stock removal 1/32" each side. Limits ±.001".

just push a button...

- Automatic size control to ±.0005"
- Duplication of repetitive loads
- Pre-set "spark out" time for flatness and surface finish
- No more "operator worry" on close work – greatly reduced fatigue
- A large part of operator's time available for
  (a) Handling or slushing work pieces
  (b) Filing burrs
  (c) Selecting correct wheel and preparing for next job
- Specially-designed sizing device with built-in feature to compensate – automatically – for wheel wear during grinding cycle.

All of these features give you *more efficiency at reduced costs!*

PUT IT ON THE BLANCHARD

Send for your free copy of Model 18-C folder.

THE BLANCHARD MACHINE COMPANY

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YOU GET
EXTRA PROTECTION
against corrosive... abrasive or explosive elements

TYPE EP
Standard TEFC
1 to 100 hp

TYPE JP
Explosion proof
1 to 100 hp

with Wagner totally enclosed motors... protected for longer motor life

If you need motors that will keep production rates up . . . that will give the continuity of service that is so important to automation . . . that will operate with complete dependability under the most severe conditions —Wagner totally-enclosed motors are your soundest choice.

Type EP Motors offer protection against corrosion, dust, abrasives, fumes, steel chips or filings. Type JP is explosion proof as well — designed and approved for use in explosive atmospheres.

NEW NEMA FRAMES—These motors are built in the new NEMA Frame sizes from 182 through 445U, with ribs that add mechanical strength and increase the surface cooling area. Effective cooling system adds to motor life.

Let your Wagner Sales Engineer show you how these protected motors can bring you savings on initial motor costs, maintenance costs and continuity of operation.

1 TO 100 HORSEPOWER—4 POLE, 60 CYCLE—NEMA FRAMES 182 THROUGH 445U

Wagner Electric Corporation

6400 Plymouth Ave., St. Louis 14, Missouri. Branches and Distributors in All Principal Cities

HEAVY DUTY BALL BEARINGS

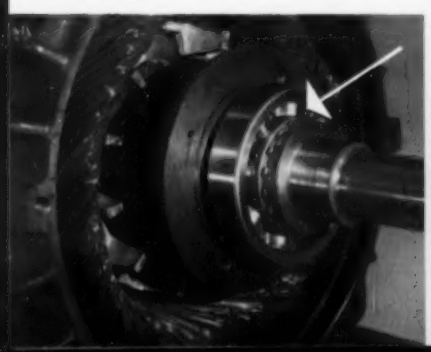
The ball bearings used in these motors are of the highest quality, with more than ample capacity to provide long troublefree service under heavy loads.

BEARINGS CAN BE RELUBRICATED

Factory lubrication will last for many years under normal service, but openings are provided to permit relubrication that adds years to motor life under severe conditions.

SEALS KEEP BEARINGS CLEAN

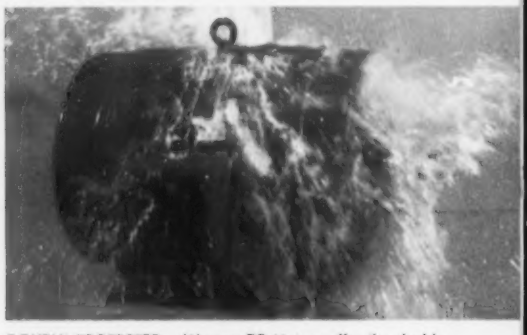
Both ends of these motors have running shaft seals to keep the bearings clean. Bearing housings are effectively sealed to prevent escape of grease.



YOU GET
DOUBLE PROTECTION
against corrosion...
against falling
or splashing liquids

Air intakes and outlets are positioned to provide complete dripproof protection.

TYPE DP
1 to 125 hp



DOUBLY PROTECTED—Wagner DP Motors offer the *double protection* of completely dripproof enclosures and rugged cast iron frames that can take rough handling and resist corrosion.

with WAGNER TYPE DP MOTORS designed to meet more application needs

Wagner Type DP Motors offer the *double protection* of rugged corrosion-resistant cast iron frames and dripproof enclosures so well designed that the DP Motor can handle many applications that formerly required splashproof motors.

These Wagner Motors are built in the new NEMA ratings that pack more power in less space, are lighter in weight and are easier to maintain.

CAN BE RELUBRICATED—Factory lubrication will last for many years in normal service—but openings are provided to permit the relubrication that adds years to motor life under severe conditions.

SLEEVE BEARING MODELS AVAILABLE

The entire line of ratings through 125 hp is available with ball bearing construction as illustrated, or with steel-backed, babbitt lined sleeve bearings that have high load carrying capacity and provide quieter operation.

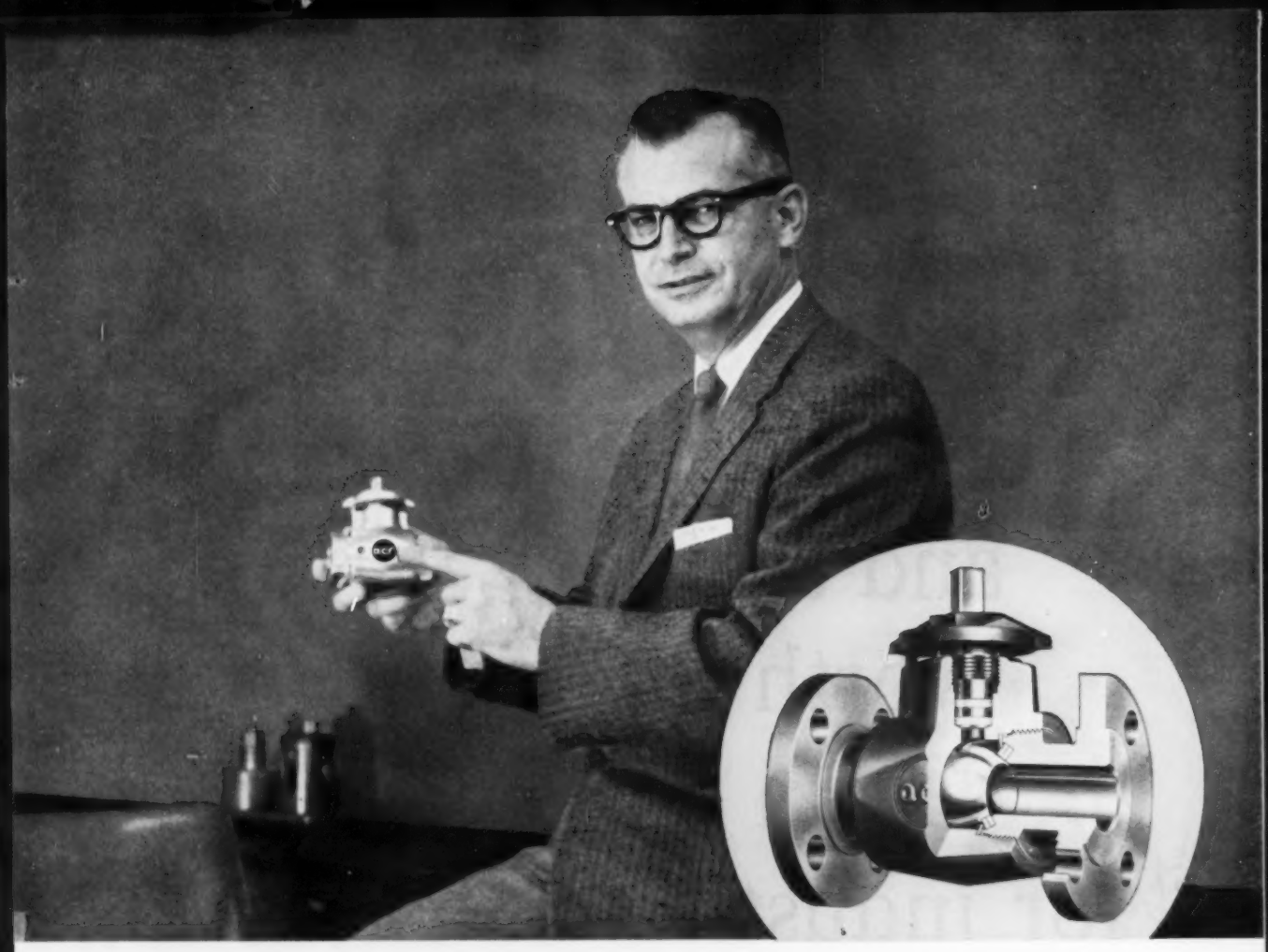
Let a Wagner Sales Engineer show you how these motors can be applied to your needs. Call the nearest branch office or write for Wagner Bulletin MU-223.

COOL RUNNING—Specially designed baffles direct cooling air through the motor to reduce stator temperature—thus increasing motor life. Blowers, cast as part of the rotor, move large volumes of air without noise or vibration.

1 to 125 HP—1750 RPM—40°C
NEMA FRAMES 182 through 445U

Wagner Electric Corporation
6400 Plymouth Ave., St. Louis 14, Missouri.

WM50-9



You should know more about the new ACF non-lubricated Ball Valve

Now, while you're thinking about it, ask your secretary to have us send you Catalog 1000.

This catalog will give you a full description of the latest product of W-K-M's creative engineering—the ACF non-lubricated Ball Valve.

This new valve was service-tested for 3½ years before it was offered to buyers. Service-*tested* and service-*proved*: in the entire 3½ years, every user reported completely satisfactory results.

It's a great valve, this new one: versatile, rugged, efficient, easy to maintain on those rare occasions when maintenance becomes necessary, a valve you can specify with complete confidence.

So send for Catalog 1000—you should know more about this *new* valve.

Product of W-K-M's *Creative Engineering*

This cut-away picture shows you why this new valve performs so dependably, lasts so long, and is so economical to maintain.

Note the full, round conduit through body and ball that assures full flow through the valve—without turbulence, and with no more pressure drop than through an equivalent length of pipe.

Note the way the ball is suspended between Teflon seats under compression, assuring leakproof service at rated working pressures, or under vacuum, indefinitely.

Note the way actual seating surfaces are sealed away and protected from any abrasive action of the lading flow in either open or closed position.

Available in carbon steel (ASA 150 lb., 300 lb.), and semi-steel (200 lb., 400 lb.). Sizes range from ½″ through 6″. See Catalog 1000 for full listing of sizes and pressures.

W-K-M

DIVISION OF ACF INDUSTRIES
INCORPORATED
P. O. BOX 2117, HOUSTON, TEXAS
Export Office: 45 ROCKEFELLER PLAZA, NEW YORK, N.Y.

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Announcing:

A new Anaconda subsidiary offering a half-century and a billion dollars' worth of experience in design and engineering for industrial construction

Anaconda-Jurden Associates, Inc., formerly Anaconda's Engineering Department, now offers the complete services of its experienced staff to industry generally.

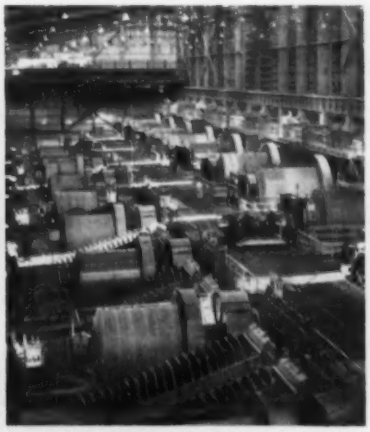
ENGINEERED BY ANACONDA: Power Plant for Erie Mining Company's Taconite Project at Hoyt Lakes, Minnesota.

ENGINEERED BY ANACONDA: Phelps Dodge Copper Reduction Works, Morenci, Arizona.

ENGINEERED BY ANACONDA: Integrated Brass Mill, The American Brass Company, Los Angeles, California.

ENGINEERED BY ANACONDA: Uranium Processing Plant of The Anaconda Company, Grants, New Mexico.

ENGINEERED BY ANACONDA: Reduction Plant, Anaconda Aluminum Company, Columbia Falls, Montana.



ENGINEERED BY ANACONDA: Concentrator Grinding Bay, Chile Exploration Company, Chiquicamata, Chile.

For more than fifty years, Anaconda has been in the business of designing and engineering some of the largest metallurgical and industrial plants in the Western Hemisphere—over a billion dollars' worth since World War II.

Anaconda's engineering department has not only built plants for the parent company and its many subsidiaries, but for other companies as well. Projects have included the design of the plant proper and such adjuncts as power plants, transmission lines, complete townsites, bridges, road systems, warehouses, offices, laboratories, water supply and sewage disposal systems.

This highly experienced engineering staff has now been formed into a new Anaconda subsidiary—Anaconda-Jurden Associates, Inc.—so that its services can be extended more readily to other clients.

Wilbur Jurden, president and chief engineer of the new concern said, "The development of a well-coordinated team of design specialists requires years working together on the attainment of common goals. Ours is a balanced staff of over 200 highly trained engineers eager to accept new challenges in the design, engineering, and construction of any major industrial facility."

The formation of Anaconda-Jurden Associates is another major step in Anaconda's continuing efforts to provide better service and products for American industry.

If you would like to learn more about Anaconda-Jurden Associates, Inc., send for a complimentary copy of our brochure, "Landmarks of Industrial Engineering." Simply write to Anaconda at 25 Broadway, New York 4, N. Y.

58260 A

The ANACONDA® Company

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Anaconda Wire & Cable Company
Andes Copper Mining Company
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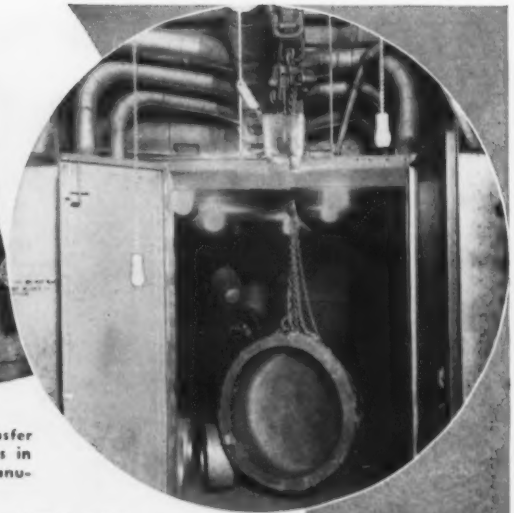
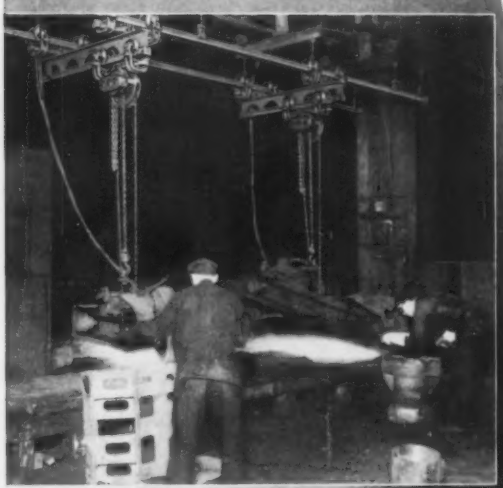
Greene Cananea Copper Company
Anaconda Aluminum Company
Anaconda Sales Company
International Smelting and Refining Company
Cochran Foil Corporation
Anaconda-Jurden Associates, Inc.

Hand-propelled transfer bridges with electric hoists in Cleaning Department of large lathe manufacturer.



Heavy castings are carried into chamber and supported on overhead tramrail during blast cleaning.

OVERHEAD EQUIPMENT *Operates Smoothly in* Abrasive Plants



Hundreds of short-span Cleveland Tramrail cranes are handling swing grinders in many plants.

In the cleaning departments where castings, forgings, billets, etc., are ground and blasted, will be found convincing proof of the design, workmanship and quality built into every piece of Cleveland Tramrail equipment. Here also is demonstrated the inherent correctness of locating materials handling facilities above and away from the floor where dust conditions are worst.

Despite blasting, piercing storms of grit, and atmospheres churning with penetrating abrasive dust, the equipment continues smooth and easy in operation — even after years of continuous service.

Dozens of Cleveland Tramrail installations are serving successfully the tough cleaning jobs of industry.

GET THIS BOOK!

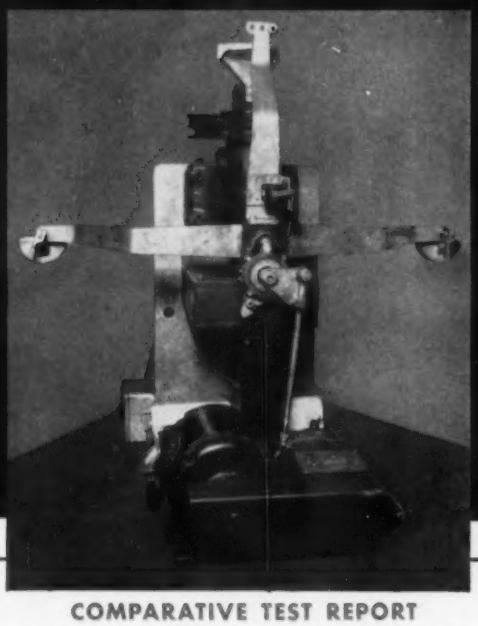
BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
4801 East 286th Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

CLEVELAND is the name and the place for ABRASIVES

Why not buy Abrasives on Fact?



Here at Cleveland, we feel that a buyer of metallic abrasives should be able to do just that.

The breakdown tester we use is shown herewith, and it's designed to separate the fact from the fiction.

After 100 passes through this tester, at 7200 r.p.m., we *know* how good our abrasives are and how long they will last.

This tester, combined with our other extensive laboratory equipment, is an integral part of our production control system.

All of it, of course, is working hard every day to give you top-quality, long-life, economical Metallic Abrasives . . . based on fact.

There are more details in our catalog, which is yours for the asking.

COMPARATIVE TEST REPORT

MATERIAL TESTED — S660 CHILLED IRON SHOT

A – Cleveland Metal Abrasive B – Competitors C – Competitors

SCREEN ANALYSIS

U.S. No.	S.A.E. Spec.	A	B	C
8	0	0	0	0
10		35.5	54.0	36.0
12	85	60.3	36.2	48.0
14	12	4.2	7.7	14.0
Pan	3	0	1.1	2.0

CHEMICAL ANALYSIS

	A	B	C
T.C.	2.72	3.29	2.42
Si	1.13	1.36	1.20
Ph	.056	.380	.130
Mn	.40	.36	.47
S	128	.176	.141

Rc HARDNESS

	A	B	C
Low	58	59	57
High	62	65	62
Average	60	63	59

BREAKDOWN TEST

Thru U.S. No. 10 on U.S. No. 12 — No. of Grams Tested—100 — 100 Passes at 7200 R.P.M.

	A	B	C
12	0	0	0
14	2	0	.1
16	4	0	.5
18	4.8	.1	3.5
20	15.6	.2	9.4
25	24.4	7.9	20.7
30	13.5	8.4	12.1
35	9.9	10.6	11.5
40	4.1	11.3	6.0
45	2.7	7.1	4.6
50	2.0	14.2	3.4
Pan	13.7	27.6	17.8
Loss	8.7	12.6	10.4

Remarks — C.M.A. material best by test. *B.M.*

CLEVELAND ABRASIVES

1. Realsteel Shot and Grit 2. Pearlitic Malleable 3. Normalized
4. "A" Iron 5. Hi-Strength "B" 6. Chilled Iron 7. Drawn Steel

World's Largest Producer of Metallic Abrasives

CLEVELAND *metal abrasive co.*

General Office: 888 East 67th Street • Cleveland 8, Ohio

Plants at: Howell, Michigan; Toledo; Cleveland; Northfield, Ohio

New Materials Handling Ideas from Republic

SAVE SPACE, CUT COSTS, IMPROVE INVENTORY CONTROL

VALUABLE FLOOR SPACE is saved at Dresser Industries by special tiering feature of Republic Box and Skid Units. Tiering lugs are securely welded to boxes permitting stacking to any practical height.

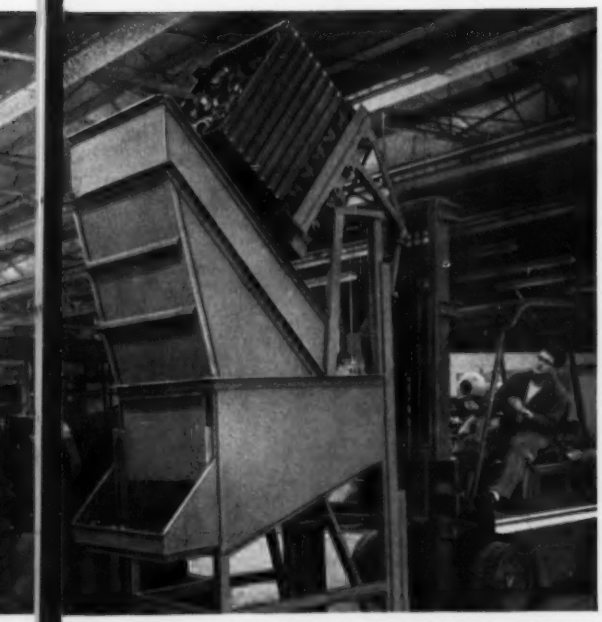
THESE REPUBLIC BOX AND SKID UNITS PERFORM FOUR JOBS, CUT HANDLING COSTS 10%. They were designed and fabricated by Republic's Pressed Steel Division for Dresser Industries' new pipe couplings and fittings plant at Wellsboro, Pennsylvania.

The multi-purpose units provide for: (1) Delivery of semi-finished parts to production stations for final machining. (2) Feeding of parts to machines in combination with hoppers built by Dresser's Ideco Division. (3) Receiving finished parts as they come off the machining line. (4) Storage of finished parts until ready for shipment.

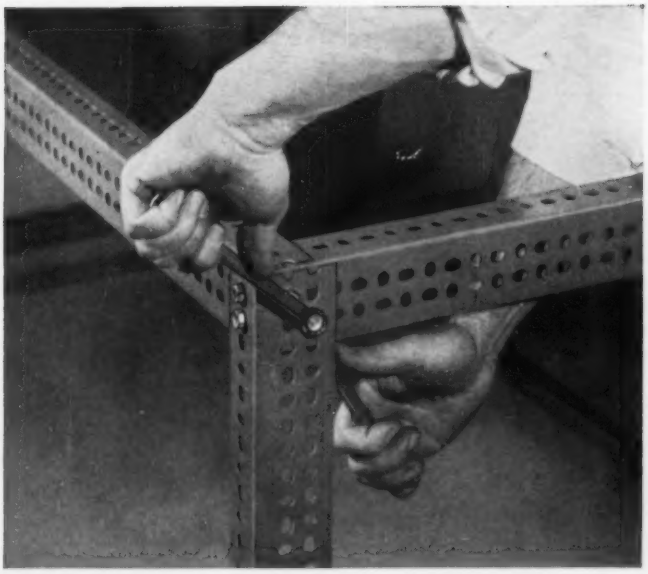
Plant management estimates a saving of 10% in handling costs since the Republic Box and Skid Units were placed in service. Also, it is possible to maintain an accurate inventory of both finished and semi-finished parts and to reduce storage space requirements.

Future savings in maintenance costs should be realized because corrugated-steel construction of the boxes and skids provides strength, assures long service life at lowest per-year-cost.

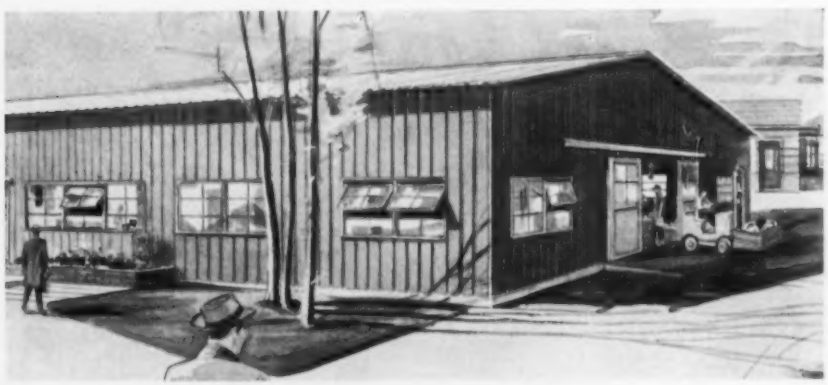
Now is the time to talk over your handling or storage problems with a Republic Engineer. A specially designed or a standard unit could cut your costs or simplify an operation. No obligation. Just contact your Republic Materials Handling Representative. Or mail the attached coupon.



CONTINUOUS MATERIAL FLOW to machines is a time and cost saving feature of Republic Box and Skid Units used in combination with Dresser-designed hoppers. Specially designed opening in front of box hooks and locks on hopper. Lift truck operator trips dumping mechanism with truck forks. Idle machine time is eliminated.



NEW SLOTTED CONSTRUCTION ANGLE MEETS ALL FRAMING NEEDS. That's Republic METAL LUMBER®, designed and engineered by Republic's Berger Division. It's versatile, durable, unlimited in application. Plan your assembly, cut Republic METAL LUMBER, join with bolts. Longitudinal and transverse slots on ¾-inch centers make adjustment easy. Bonderized and finished with baked enamel. Ten angles per bundle, light or heavy gage, 10- or 12-foot lengths, with hardware. Bundle stores in same space as one 2″ x 4″ piece of lumber. Send coupon for catalog loaded with ideas.



NEW "BUDGET BUILDINGS" by Republic's Truscon Division brings the cost of additional storage space down low. It's a quality steel building with a tight, dense, galvanized coating that's more rust-resisting than ever. Simplified design permits fast on-site erection. No painting needed. Your "Budget Building" order will be handled fast from off-the-shelf stocks. Immediate delivery in widths of 32, 36, 44, and 48 feet . . . 12- and 14-foot heights. Lengths as long as you want them. Send coupon for complete details.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. IA-3086A
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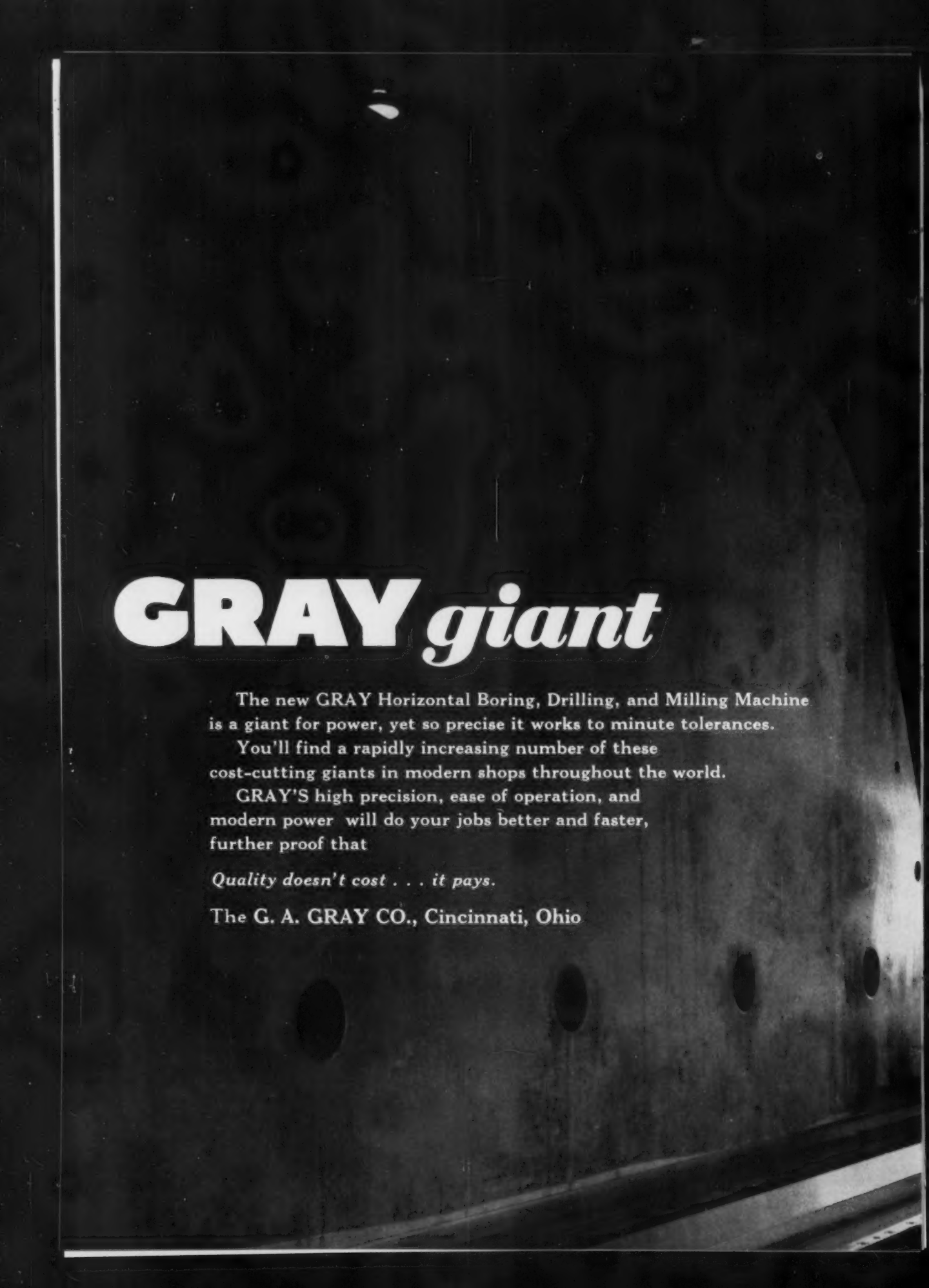
Send more information on:
☐ Materials Handling Equipment
☐ Truscon "Budget Buildings"
☐ Republic METAL LUMBER

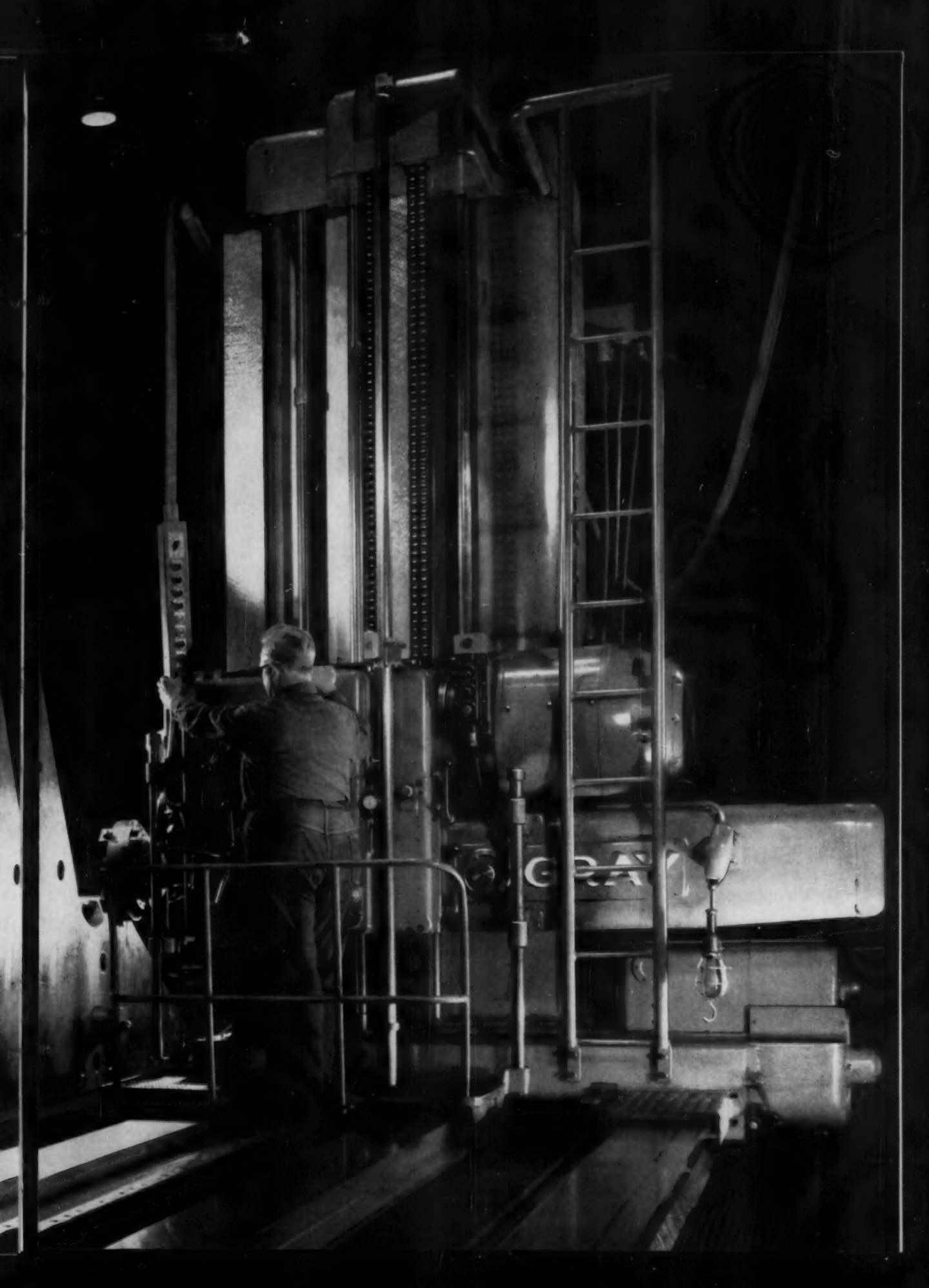
Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____


GRAY giant
The new GRAY Horizontal Boring, Drilling, and Milling Machine is a giant for power, yet so precise it works to minute tolerances.
You'll find a rapidly increasing number of these cost-cutting giants in modern shops throughout the world.
GRAY'S high precision, ease of operation, and modern power will do your jobs better and faster, further proof that
Quality doesn't cost . . . it pays.
The G. A. GRAY CO., Cincinnati, Ohio



The Aluminum Man*...

*The 18 years' experience of Gordon Coppins—salesman for Alcoa Distributor Brace-Mueller-Huntley, Inc., with headquarters in Syracuse, N.Y.—is typical of the men who serve American enterprise through intimate knowledge of the miracle metal . . . aluminum!

He helps blueprint building progress

When construction requirements are for architectural extrusions that dependably combine *high strength* with *light weight* and *low cost*—in a metal inherently resistant to corrosion—*The Aluminum Man* provides the right answer for more of business and industry, more and more!

He is your Alcoa distributor salesman. And he offers the most complete selection of *aluminum* architectural extrusions in the industry. Behind him—and the design and alloy recommendations he makes—stands intensive and detailed mill-training by Alcoa, pioneer in aluminum application research for 70 years!

Call *The Aluminum Man* on your next building problem. His service and assistance are as close at hand as your telephone...and they are available to you whether you need a *few* pounds or *thousands* of pounds of Alcoa® Aluminum ...the light metal with the bright future that's being seen in more places . . . more and more!

Call *The Aluminum Man*
He's your Alcoa Distributor Salesman
for sheet, tube, shapes
and other Alcoa Mill Products

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LUdlow 8-0161
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San Diego
Ducommun Metals & Supply Co.
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Pacific Metals Company, Ltd.
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COLORADO
Denver
Marsh Steel Corp., KEystone 4-1241
Metal Goods Corp., DUdley 8-4141

CONNECTICUT
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TRinity 4-1631
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Whitehead Metal Products Co., Inc.
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FLORIDA
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ILLINOIS
Chicago
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REpublic 7-3000
The Corey Steel Co., BIshop 2-3000
Steel Sales Corp. ... BIshop 7-7700

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Indianapolis
Steel Sales Co. of Indiana, Inc.
LIberty 6-1535

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Wichita
Marsh Steel Corp., WHitehall 2-3231
Metal Goods Corp., AMherst 5-3191

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LOUISIANA
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TRowbridge 6-4680
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Central Steel & Wire Company
TWinbrook 2-3200
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TYler 6-3000

MINNESOTA
Minneapolis
Steel Sales Co. of Minnesota
STerling 1-4893

MISSOURI
Kansas City, North
Marsh Steel Corp. ... GRand 1-3505
Metal Goods Corp. ... GRand 1-3516
St. Louis
Metal Goods Corp., HArrison 7-1234
Steel Sales Co. of Missouri, Inc.
PRospect 1-5255

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Edgcomb Steel of New England, Inc.
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Whitehead Metal Products Co., Inc.
HUmboldt 5-5900
Hillside
Miller Steel Co., Inc., WAverly 6-6000
Kenilworth
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Victoria 8700
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(Brooklyn) Strahs Aluminum Company, Inc., BRowning 2-7000
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STilwell 6-7737
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Sachs Metal Supply Co.
FAirview 8-1710
Syracuse
Brace-Mueller-Huntley, Inc.
HOward 3-3341
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GRanite 4-4641

NORTH CAROLINA
Charlotte
Edgcomb Steel Co., FRanklin 5-3361

OHIO
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Central Steel & Wire Company
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Williams & Co., Inc...CApitol 1-3000
Cleveland
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Williams & Co., Inc.
AXminster 4-1623
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Ohio Metal & Manufacturing Co.
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Tulsa
Metal Goods Corp. ... Gibson 7-4101

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PENNSYLVANIA
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Metal Supply Co., STevenson 7-0220
Whitehead Metal Products Co., Inc.
BAldwin 9-2323
Pittsburgh
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York
Edgcomb Steel Co. ... 47-1411

RHODE ISLAND
Slatersville
Edgcomb Steel of New England, Inc.
POplar 7-0900

TENNESSEE
Memphis
Metal Goods Corp., WHitehall 8-3407

TEXAS
Dallas
Metal Goods Corp., FLeetwood 1-3271
Houston
Metal Goods Corp. ... FAirfax 3-0141

UTAH
Salt Lake City
Pacific Metals Company, Ltd.
DAvis 2-3461

WASHINGTON
Seattle
Pacific Metal Co. ... MAin 2-6925

WISCONSIN
Milwaukee
Central Steel & Wire Company
HUmboldt 1-5000
Steel Sales Co. of Wisconsin
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Aluminum Products—Hawaii, Honolulu 14, **HAWAII**

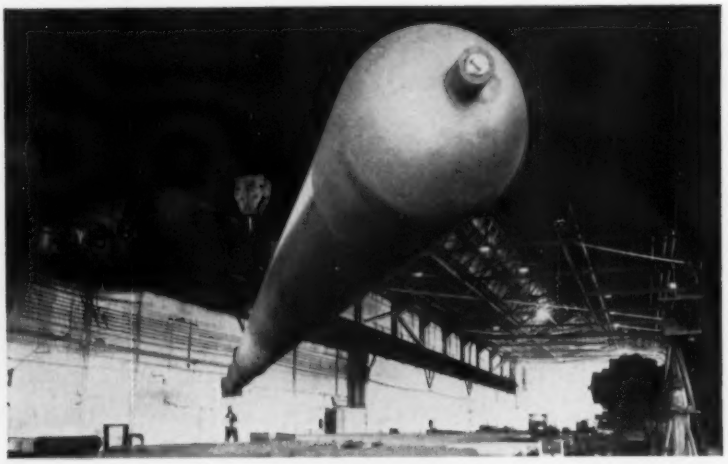
Aluminum Company of America, 958-L Alcoa Building, Pittsburgh 19, Pennsylvania

When you buy from U. S. Steel

STEEL + PLUS IN ACTION: TECHNICAL ASSISTANCE

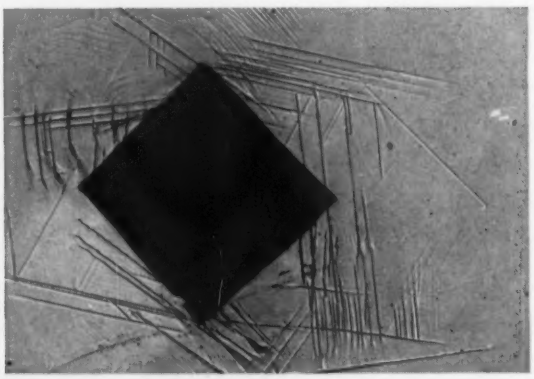
The impeller for a centrifugal gas compressor whirls at speeds up to 6,000 rpm., and is subjected to tremendous stress. The Cooper-Bessemer Corporation previously made impellers from a type of steel that was hard to weld. A USS metallurgist suggested "T-1" Constructional Alloy Steel. It has a phenomenal 100,000 psi yield point, and can be welded by ordinary methods, *without* pre-heating or stress relief. The new "T-1" Steel impellers are easier to fabricate and they can withstand 115% more stress than designed for. Shown here with a "T-1" Steel impeller part are Mr. W. McCracken, right, the Chief Metallurgist of The Cooper-Bessemer Corporation, and J. M. Trutz, USS Service Metallurgist.

you get STEEL + PLUS



STEEL + PLUS IN ACTION:
FACILITIES

This blimp-like cylinder is headed for an oxygen plant in Illinois. Thirty of these 80-foot giants were made at U. S. Steel's National Tube Division, Christy Park Works, McKeesport. Similar seamless cylinders, with walls up to 3" thick, are able to contain pressure of 10,000 psi. They were practically unheard of until a few years ago when National Tube developed them to meet the demands of new, high-pressure requirements.



STEEL + PLUS IN ACTION:
RESEARCH

The black square on this photomicrograph is the impression made by a diamond-tipped penetrator when it was pressed into a crystal of age-hardened steel. The lines and ripples were caused when layers of atoms slipped and wrinkled around the penetrator. U. S. Steel researchers study the patterns in such micrographs to learn what happens atomically when steel is bent, flexed or broken. This helps us to develop new and better steels.

STEEL + PLUS IN ACTION:
MARKETING ASSISTANCE

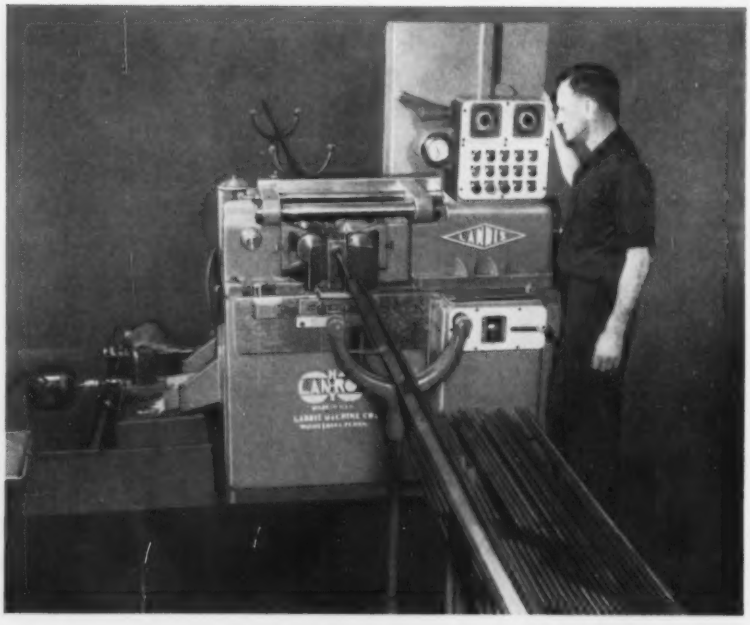
Automobile manufacturers use Stainless Steel for much of the trim on new models. Because it's Stainless, the trim *stays* sparkling bright—a point that means a lot to new car buyers. To help promote this feature, U. S. Steel prepared posters showing where Stainless is used on various makes of cars, and sent these valuable sales aids to 60,000 auto dealers.

USS and "T-1" are registered trademarks

American Bridge • American Steel & Wire and Cyclone Fence • Columbia-Geneva Steel • Consolidated Western Steel
National Tube • Oil Well Supply • Tennessee Coal & Iron • United States Steel Homes • United States Steel Products
United States Steel Supply and Gerrard Steel Strapping • Universal Atlas Cement • United States Steel Export Company

USS **United States Steel**

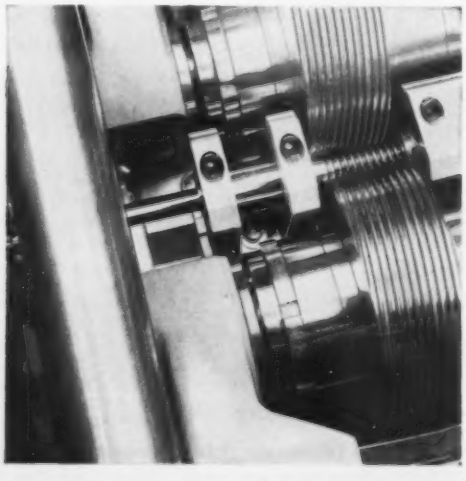
4 feet of thread *per minute*



with the LANHYROL thread rolling machine

The LANHYROL Thread Rolling Machine has shown outstanding results in output and thread quality producing ¾" jack screws at the M & S Manufacturing Company in Hudson, Michigan.

20-foot bar lengths of C1117 steel are being formed by Thrufeed Rolling at the rate of 48 linear inches per minute. The ¾"—6 pitch left-hand Acme threads are held within .001" on the pitch diameter throughout the entire bar length. Over 59,000 feet of thread have been produced with a set of roll dies.



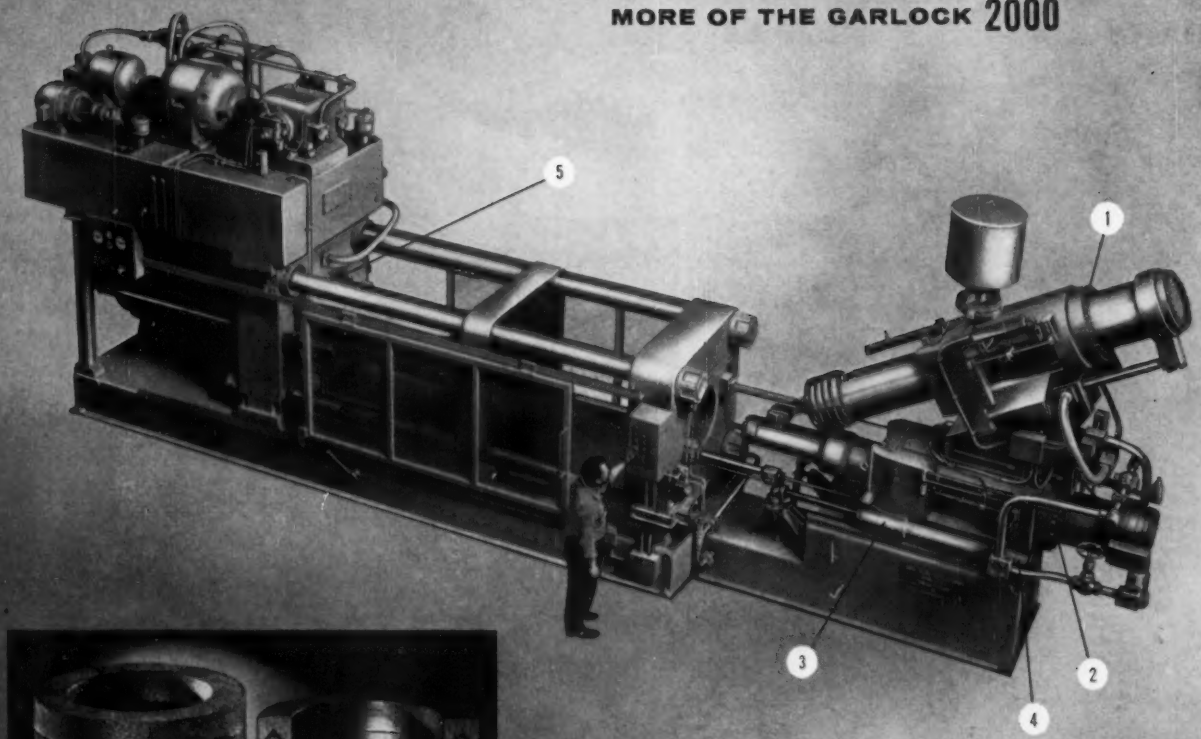
In this application, the workpiece is placed in a feeding tube which is halved for loading convenience (Figure 1). It is then passed axially into ball-bearing work supports and between the rolls (Figure 2). Rolls with a throat section for progressive generation of the thread provide a self-leading action as the threads are formed.

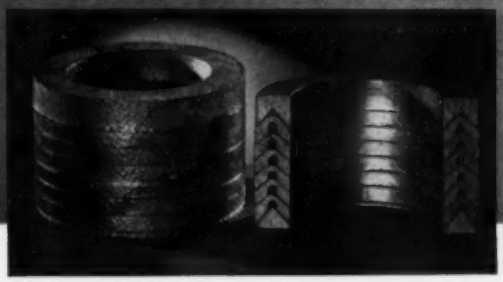
The LANHYROL Machine is designed to produce quality threads at high rates of output. Its range and flexibility is so great that we recommend your consideration of this equipment for any job requiring precision threads of excellent finish at high production rates. Please send specifications and ask for Bulletin E-60.

486

LANDIS *Machine* COMPANY
WAYNESBORO · PENNSYLVANIA

MORE OF THE GARLOCK 2000





CHEVRON is used in stuffing box of (1) plasticizing ram, (2) shooting cylinder ram, (3 & 4) telescoping pipe connections, and (5) main clamping ram on mammoth plastics injection molding-machine made by Watson-Stillman Press Division of Farrell-Birmingham Co., Inc.

Garlock CHEVRON* Packings help achieve precision, efficiency in plastics molding . . .

WIDELY USED ON WATSON-STILLMAN'S complete line of plastics injection molding machines, Garlock CHEVRON Packings do an outstanding job sealing in hydraulic fluids and preventing loss of pressures. On pre-plasticizing ram, shooting cylinder ram, telescoping pipe connections and on main clamping ram, they help maintain 3000 psi pressures and prevent leakage of oils important in the precision molding of freezer compartments, battery cases, radio and TV cases, and large, deep-drawn pieces.

THERE ARE MANY REASONS why Watson-Stillman chooses Garlock to do these jobs. CHEVRON Packings have an exclusive hinge-like construction which permits free operation with a minimum of friction. As pressure increases, CHEVRON tightens to prevent leakage. As pressure declines, the packings ease off, resulting in unobstructed movement of the ram or piston without leakage. This means that, once initial gland adjustment is made, no further regulation is necessary to compensate for pressure change. CHEVRON Packings can be applied against practically any lubricants, liquids, or solvents—at high or low pressures—and at temperatures to +500° F.

CHEVRON PACKINGS are an important part of "the Garlock 2,000" . . . two thousand different styles of packings, gaskets, and seals for every need. The only complete line. See your local Garlock representative, or write for Folder AD-115. *Registered Trade Mark

THE GARLOCK PACKING COMPANY, PALMYRA, N. Y.

For Prompt Service, contact one of our 30 sales offices and warehouses throughout the U.S. and Canada.

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Packings, Gaskets, Oil Seals, Mechanical Seals, Molded and Extruded Rubber, Plastic Products

Another fine product gains NEW S.A. By Switching to the Saginaw Screw*

WORLD'S MOST EFFICIENT ACTUATOR LIFTS 450 LB. FERGUSON TRAIL RAKE CAGE WITH 75% LESS EFFORT

Massey-Ferguson engineers wanted "something better" than the old-fashioned acme screw in the manual mechanism for adjusting rake cage height in their new Trail Rake "36". They found what they wanted in the Saginaw Ball Bearing Screw. It cuts cranking effort 75%—and since it needs *no lubrication*, it's never fouled by clinging dirt. They figured the Saginaw Screw would add extra ***S**ales **A**ppeal—and they were so right. Dealers report farmers love it!

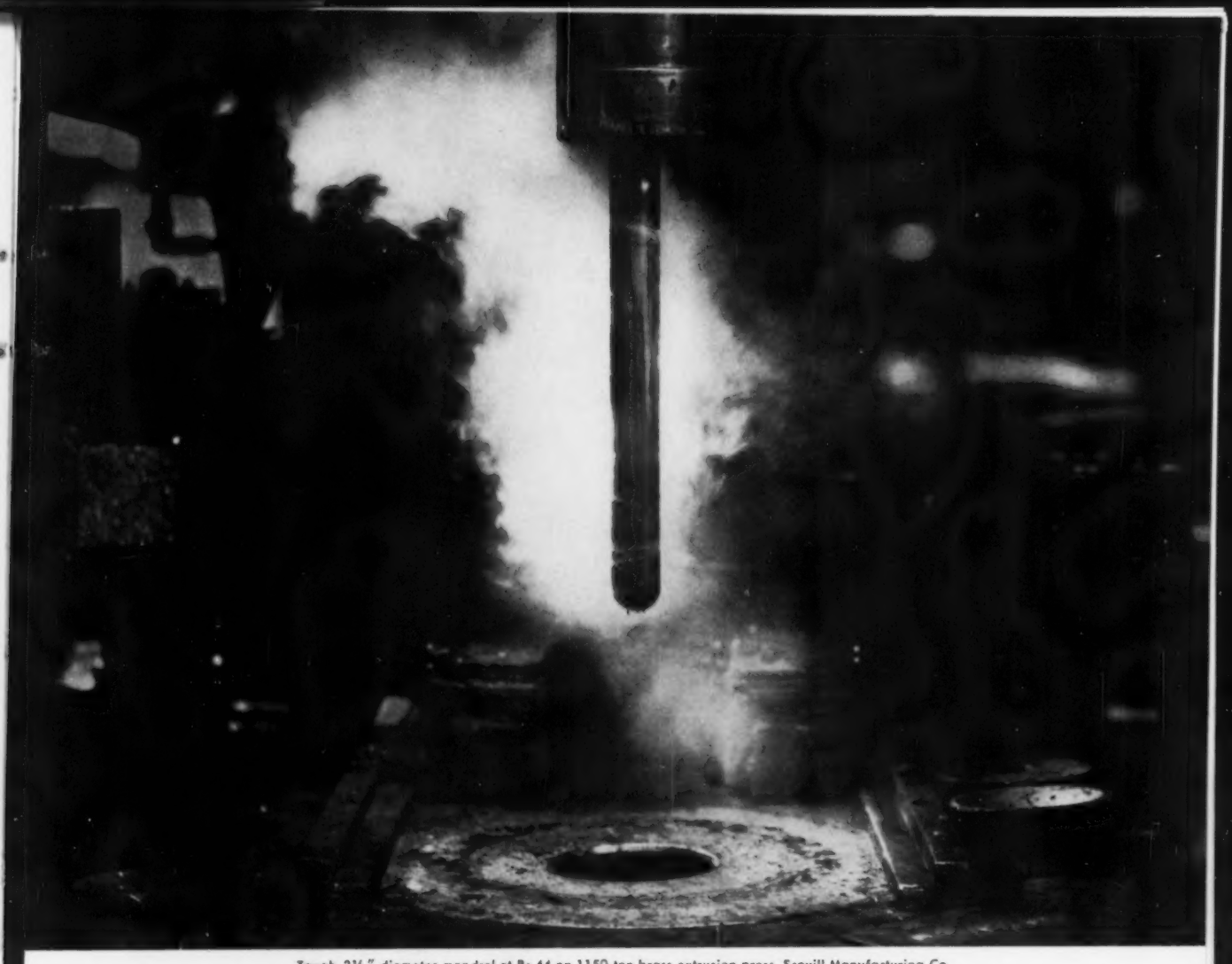
The Saginaw Screw converts *rotary* motion into *linear* motion with close to 100% efficiency. That's why alert manufacturers are saving so much effort, power, weight, space and cost by simply switching from inefficient acme screws and costly hydraulics to these amazingly versatile Saginaw Screws.

We're already building them in sizes from 1½ *inches* long for delicate electronic controls to 39½ *feet* long for monster machinery. So if your products (no matter how big or small) use any kind of actuation device, Saginaw Screws may give them that vital new **S**ales **A**ppeal you're looking for now.

Just send us your catalog and our expert engineers will gladly suggest any possible applications. Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan—world's largest builders of b/b screws and splines.

Give your products NEW SALES APPEAL... switch to the* **Saginaw ball bearing **Screw**

WORLD'S MOST EFFICIENT ACTUATION DEVICE



Tough 2½" diameter mandrel at Rc 44 on 1150 ton brass extrusion press. Scovill Manufacturing Co.

Mandrel of HALCOMB 218 retains toughness and hardness at hot work temperatures...

This mandrel is made of Halcomb 218—a tough, air-hardening hot work steel. Halcomb 218 is suitable for tools like this which require a higher degree of toughness at moderately elevated temperatures than is obtainable with the tungsten types of hot work steels. And Halcomb 218 *retains both* its hardness and strength at these temperatures.

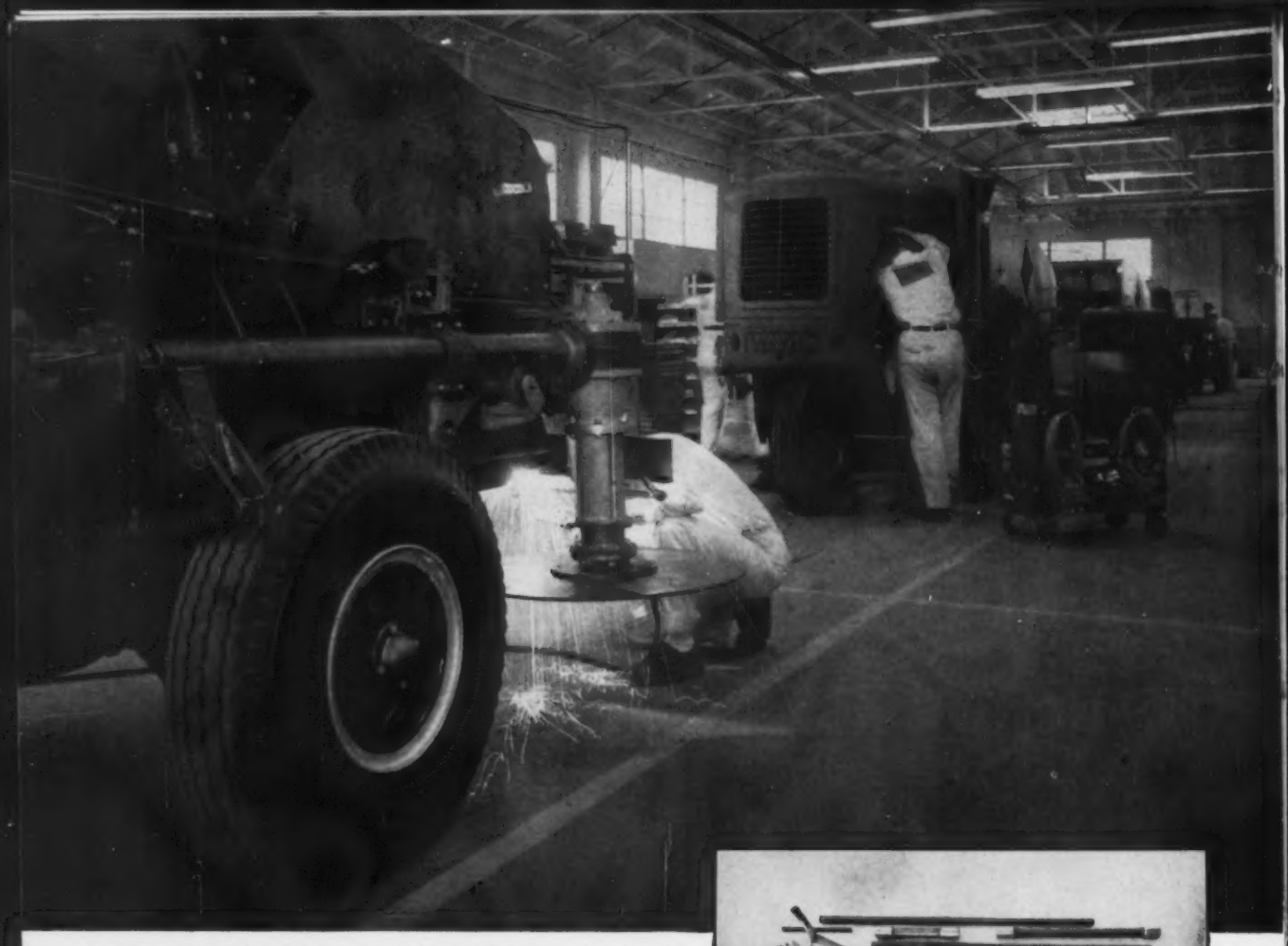
For example, at a hardness of Rc 44, Halcomb 218's Charpy Impact Strength is 33 ft-lbs at 500F. And it will retain this hardness after 1 hour, after 10 hours and even after 100 hours at temperatures up to 900F.

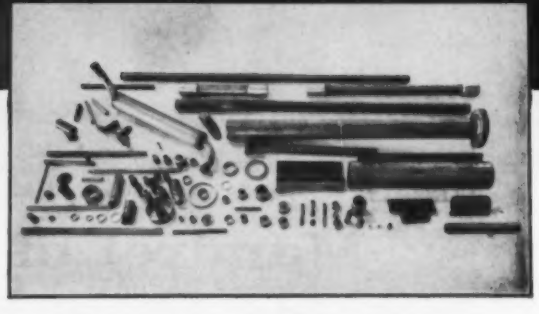
Properties like these cut tooling costs. The mandrel shown above is good for 1200 pushes, for example, and even then all it needs, usually, is repolishing before being used again.

Halcomb 218 is particularly useful for all hot work operations on which drastic coolants are used. It even resists breaking very successfully when water cooled in operation. If these sound like advantages you can use, call your local Crucible representative for more complete data. *Crucible Steel Company of America, Dept. TK06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE STEEL COMPANY OF AMERICA

Canadian Distributor—Railway & Power Engineering Corp., Ltd.





Seven-million miles of street and industrial sweeping in 700 cities have proved rugged dependability of Wayne Manufacturing Company's equipment. Here is the final assembly line in its plant. Large horizontal tube on sweeper is jack shaft housing for gutter broom drive. Wayne makes 300 parts from Pittsburgh Steel's Seamless cold-drawn tubing (see inset at right). That's how . . .

Pittsburgh Steel Seamless Tubes Help Wayne Make Clean Sweep

Nobody knows how many brooms it would take to keep the world clean. But out in Pomona, California, Wayne Manufacturing Company is ready to tackle the job with a complete line of power sweepers.

Founded only ten years ago, the Wayne Company has grown rapidly until today it produces more street and industrial power sweepers than all others in the field combined. Wayne is the only power sweeper produced by assembly-line operation.

Largest Wayne sweepers handle up to four cubic yards of debris at a time. Their assembly requires more than 1,000 complicated and accurately manufactured steel parts.

• **300 Key Parts**—Of these, more than 300 key items are fabricated from Pittsburgh Steel Company's Seamless Tubing in both carbon and alloy grades in sizes ranging from one-quarter inch to six inches in diameter. It is furnished cut to length and ready for fabrication by Baker Steel & Tube Company of Los Angeles, a Pittsburgh Steel distributor.

This service helps speed Wayne production, keeps inventories down and is typical of service rendered by all Pittsburgh distributors.

"Requirements for the parts produced from Pittsburgh tubing are exacting," says Wayne production vice-president, Roy E. Nelson. "Our sweepers are doing big jobs, many of them operating on a 24-hour schedule, and we

must have a tough, dependable product in the critical spots to take this constant heavy beating."

That is why Wayne uses Pittsburgh Seamless Tubing in critical components such as rugged axle assemblies, torque housings, drive shafts, hydraulic actuating cylinders—even small fittings.

Over the years, Wayne production men have found Pittsburgh tubing has the surface finish, close size tolerance and concentricity which minimize the amount of machining that must be done. Its uniformly high physical properties and internal soundness provide the stamina necessary for long, trouble-free service.

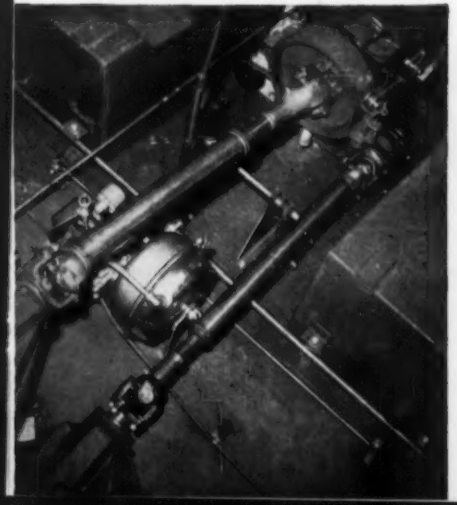
• **Ease of Fabrication**—The machinability and weldability of Pittsburgh tubing make for ease of fabrication, keep scrap losses down, and assure uniform parts—all important factors in keeping production lines moving smoothly.

As an aid to industrial good housekeeping, Wayne produces smaller power sweepers for use inside and outside plants. Its newest line is the Autoette series which includes the glamorous "Golfmobile" and the family "Cruise About." Three industrial models provide efficient transport of personnel and materials in sprawling plants.

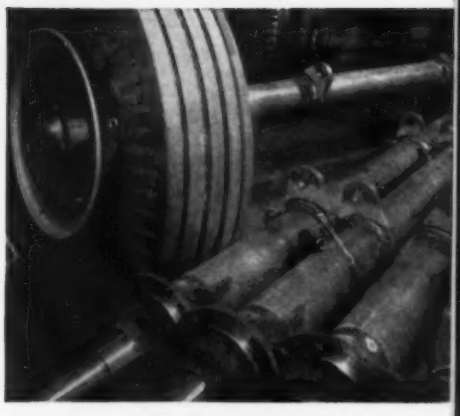
These industrial sweepers and Autoettes also depend upon Pittsburgh Steel tubing for parts in key assemblies.

Manufacturers find the uniformly high quality of Pittsburgh cold-drawn steel seamless tubing and excellent service from Pittsburgh distributors are big assets in improving products and operating efficiency. To enjoy these benefits get in touch with the representative nearest you.

Pittsburgh tubes withstand torque and fatigue in main and auxiliary drives on Wayne sweepers.



Machinability and weldability of Pittsburgh tubes are vital in making this shaft which goes into differential assembly. Short tube is welded over longer, smaller diameter tube, then machined to tolerance of .001 inch to assure perfect fit in housing.



Rugged front axle assembly of Wayne sweeper made from Pittsburgh tubes carries most of weight of machine and up to four cubic yards of debris. It must withstand road shocks and constant heavy-duty operation.

Pittsburgh Seamless Distributors

Baker Steel & Tube Company
Los Angeles, California

Chicago Tube & Iron Company
Chicago, Illinois

Cleveland Tool & Supply Co.
Cleveland, Ohio

Drummond McCall & Co., Ltd.
Montreal, Quebec, Canada

Edgcomb Steel Company
Philadelphia, Pennsylvania

Gilmore Steel & Supply Co.
San Francisco, California

Earle M. Jorgensen Co.

Perry Kilsby, Inc.
Los Angeles, California

Mapes & Sprowl Steel Co.
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Metal Goods Corporation
St. Louis, Missouri

Miller Steel Company, Inc.
Hillside, New Jersey

A. B. Murray Co., Inc.
Elizabeth, New Jersey

C. A. Russell, Inc.
Houston, Texas

Ryerson, Joseph T. & Son, Inc.
Chicago, Illinois

Solar Steel Corporation
Cleveland, Ohio

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Every industry has one member who specializes in customer satisfaction

Your Inventory Control of aluminum coiled sheet and foil can be virtually automatic when you specify Anaconda. Our policy of custom rolling all orders to customers' specifications, coupled with extremely flexible production facilities, assures you prompt delivery at all times.

Precision production controls further assure that your Anaconda Coiled Sheet is the finest you can buy. Modern rolling mills with X-ray gauge controls give you uniform thicknesses and consistent yield per pound. Uniformity of temper is maintained, order after order. Control of grain size provides maximum workability. High-speed slitters cut exact widths, precision edges.

The Anaconda line includes gauges from .006" to .064"; widths from ⅜" to 54"; alloys: 1100, 1145, 3003, 3004, 5005, 5050, 5052, 5357. And watch for an expanding line of wrought aluminum products.

Anaconda Aluminum Foil, custom-rolled to the same high standards of quality, is available in gauges from .00023" to .0059", in widths to 54".

For action, call our nearest District Sales Office or contact us direct. For the new booklet, "Anaconda Aluminum Coiled Sheet", write Dept. A-11, 1430 S. 13th St., Louisville 10, Kentucky.

ANACONDA® ALUMINUM

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LOUISVILLE, KENTUCKY
A SUBSIDIARY OF THE ANACONDA COMPANY

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The Leading Supplier to the Stamping Industry

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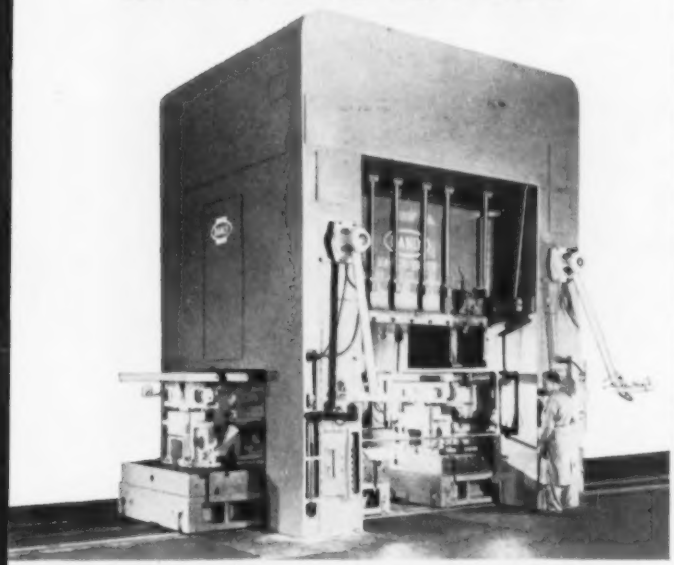


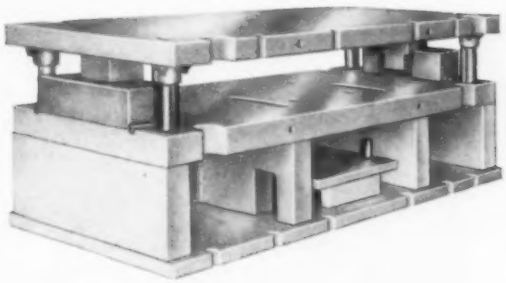
The report of the Business and Defense Service Administration shows that Danly led all producers of presses during 1957. Industry made Danly the first choice because you get lower operating costs with a Danly Press—you can depend on it! Each press is engineered to turn out more accurate stampings . . . to produce more units per shift . . . and to reduce profit-eating maintenance and spare parts inventories.

There are many new developments you should know about, such as the Quick Die Change feature available on all Straight Side Presses . . . single, double and triple action . . . the modern high-production Autofeeds . . . and the completely modern line of Open Back Inclinable presses just introduced. See how Danly can help you reduce costs and give your products the stamp of leadership!

Shown above: *Danly Quick Die Change Press.* Die at right leaves press as one at left moves into operating position. Time for the change: 6 minutes. Now operating in plant of French auto manufacturer.

Write for Quick Die Change Press Bulletin that contains drawings and complete description of these new presses.

in DIE SETS and Die Makers' Supplies



Danly is now working on its fifth million in die set production. Included in this production are many die sets for the automotive industry—that are working in that industry in its multi-million car production of today.

In every instance, Danly can meet your most exacting diemaking specifications with a die set—standard or special. Since pioneering the first mass-produced precision die sets 36 years ago, Danly has continuously developed new production, inspection and distribution methods to serve you better.

Today, there's the new Danly Die Set with Demountable Bushings being assembled in a factory branch or distributor assembly plant near you. It is your fast, convenient source for toolroom and pressroom supplies that bear the stamp of leadership. Danly facilities for special Die Set manufacture are also improved and expanded.

Shown above: a special die set that Danly recently built for a major automotive manufacturer. It will finally be used in a South American plant of the company. It is equipped with Danly Demountable Bosses, above, and Bushings, below.

Send for money-saving facts. Write us and your distributor or branch will give you helpful information on Danly Die Sets.

DANLY MACHINE SPECIALTIES, INC.

DANLY®

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ANOTHER INDUCTO INSTALLATION...

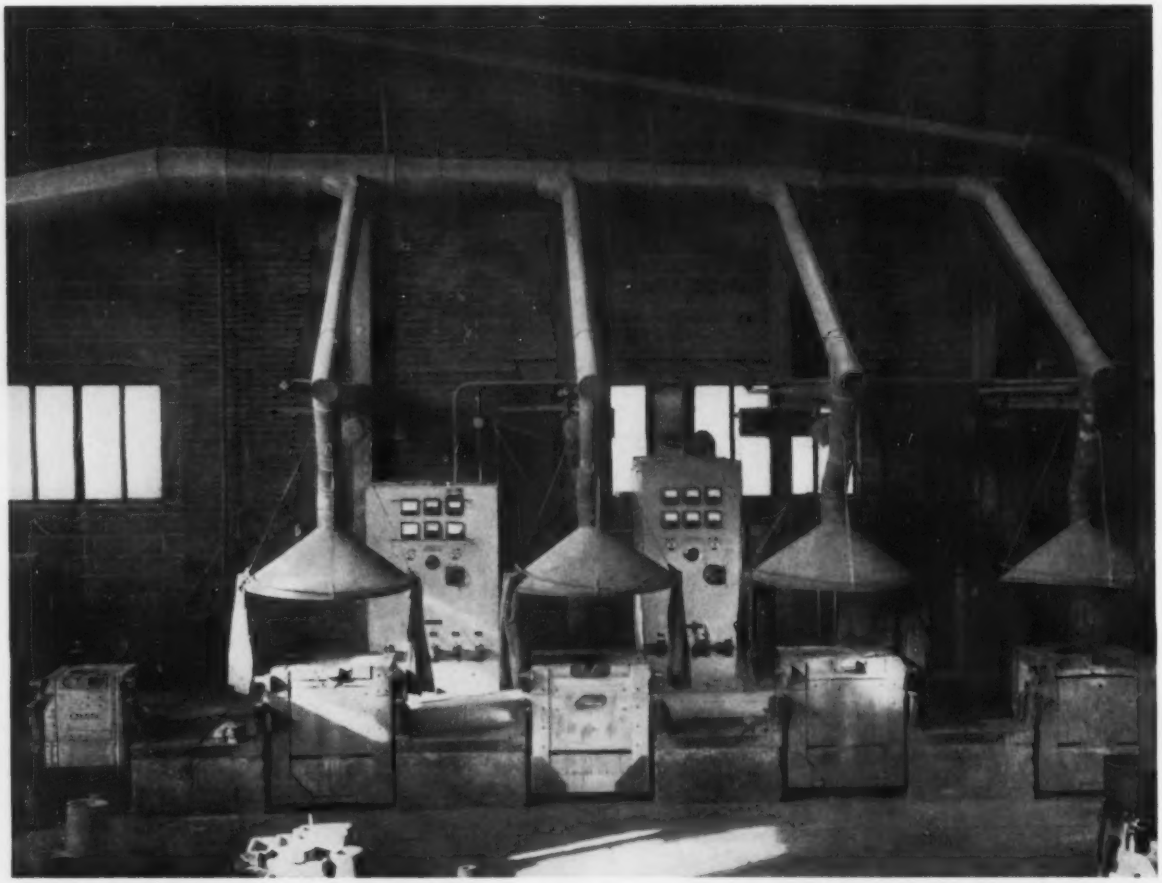

PHOTO COURTESY OF SORENSEN INDUSTRIES.

In Two Years Of Operation At Sorensen Industries, These INDUCTO Furnaces Saved More Than Their Cost

Since Sorensen Industries installed INDUCTO induction furnaces, they have reduced metal losses and minimized rejects. These benefits plus higher melting speeds have saved more than the cost of the furnaces in just two years of operation.

The installation includes four, 1000-pound furnaces which are operated from a 250 kw m-g set. A 50 kw m-g set is interlocked with the main unit so that it can maintain a molten bath in any of the four furnaces at holding temperatures. Four furnaces were used in this installation to eliminate contamination from one alloy to another.

You, too, can benefit from modern INDUCTO metal melting equipment. Want to know more? Write today. INDUCTO engineers will be glad to study your requirements. The Inductotherm Corporation, 412 Illinois Avenue, Delanco, New Jersey.

INDUCTOTHERM corporation

412 Illinois Ave. Delanco, N. J.

Youngstown tin plate

will help feed the families of her day

Automized, round-the-clock canning of foodstuffs in *her* day will feed more families than the world has ever known. Youngstown, today, is anticipating tomorrow's need for tin plate —in increasing quantity and quality. Continuing advancements in facilities, the result of tin plate research, make certain that millions of families in *her* day will enjoy the finest of food... *packaged in Youngstown tin plate.*

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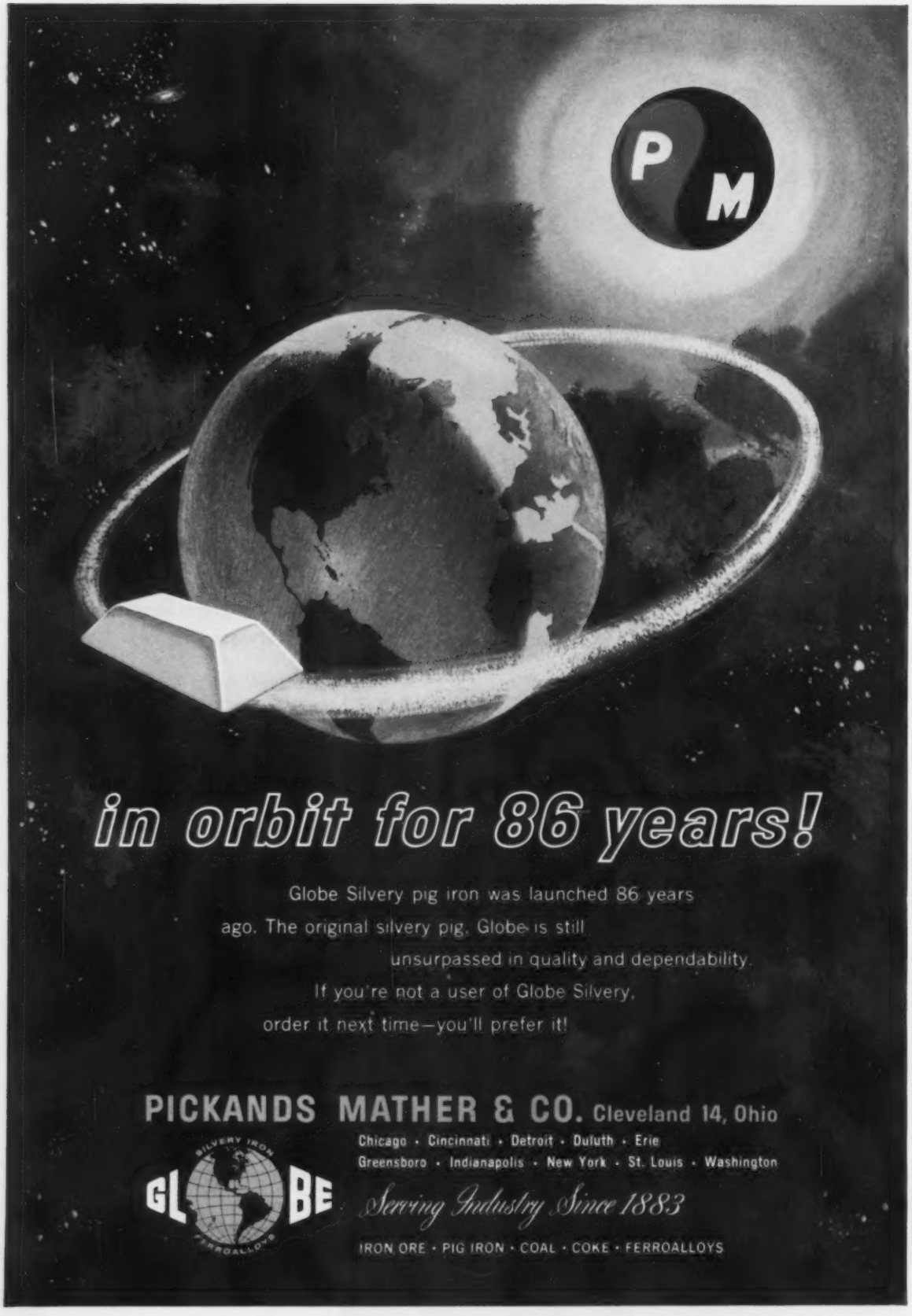
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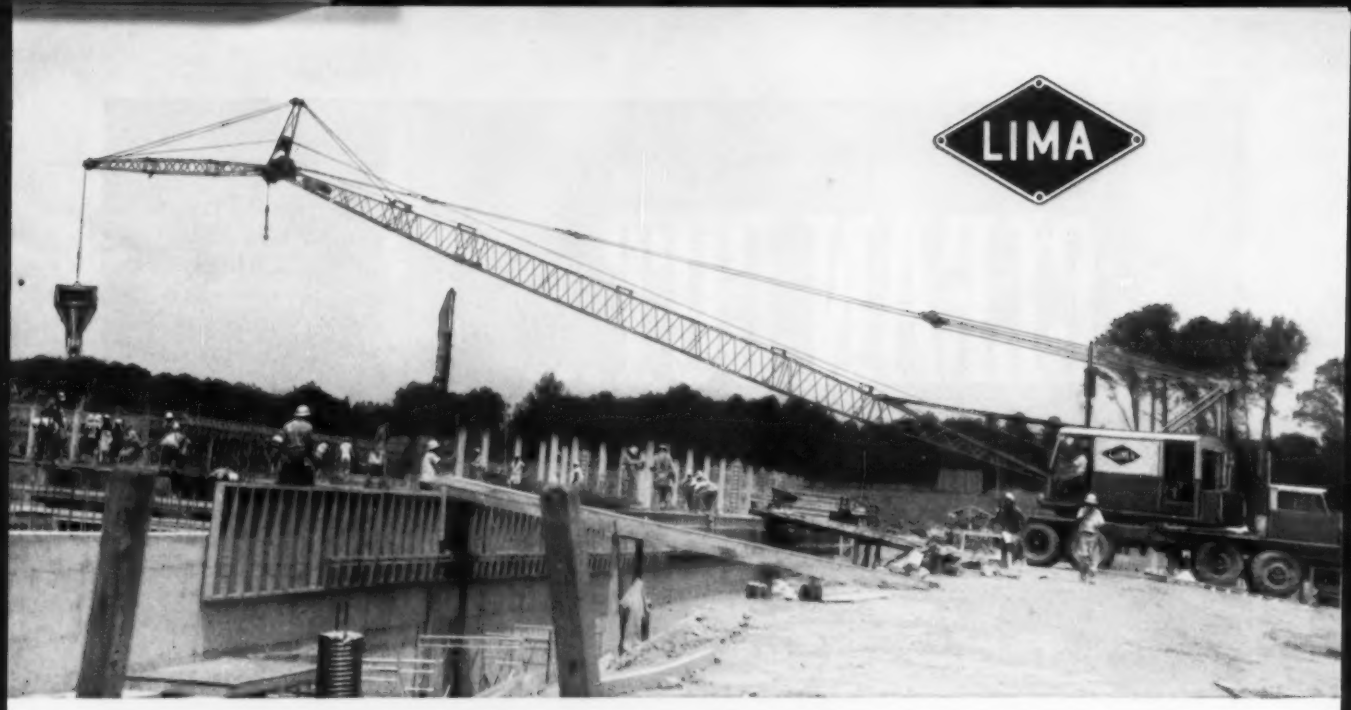

New LIMA 64-T Truck Crane with 100' boom and 30' jib reaches out almost horizontally to pour concrete on foundation job.

LIMA 64-T . . . new 50-ton truck crane.

New LIMA 64-T Truck Crane combines high capacity, long reach, low weight

The 64-T Truck Crane with 50 ton rated capacity is the latest addition to the long line of dependable, high performance LIMA cranes. The 64-T is completely designed and built, from the ground up, by LIMA. The latest developments in high strength steels are utilized to combine high capacity and long reach, with low weight. The main frame and components of the 64-T carrier is of "T-1" steel (100,000 psi yield strength).

Goes anywhere truck can go

Mounted on 12 heavy duty tires, the LIMA-designed 8 x 4 (rear drive) or 8 x 6 (front and rear drive) carrier will go anywhere a truck can go, on-or-off highway, at speeds up to 25 mph.

The LIMA Type 64-T Truck Crane will raise a 150-ft. boom, plus 30-ft. jib (180'-0" total), from the ground without auxiliary aid.

Gantry can be lowered to cab height while boom is suspended. Rear counterweight, pin connected front and rear outrigger boxes and beams are easily removed to reduce road weight. Hydraulic power steering, precision air controls and air brakes insure easy operation to reduce operator fatigue and produce top performance.

Versatile LIMA Cranes

LIMA cranes—capacities to 110 tons crawler mounted and 70 tons rubber mounted—are highly versatile. Interchangeable front ends make them adaptable to almost every job; they can be used as cranes, shovels, draglines or pullshovels.

Learn now why LIMAS are the choice everywhere for rugged, dependable performance! See your nearby LIMA distributor or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

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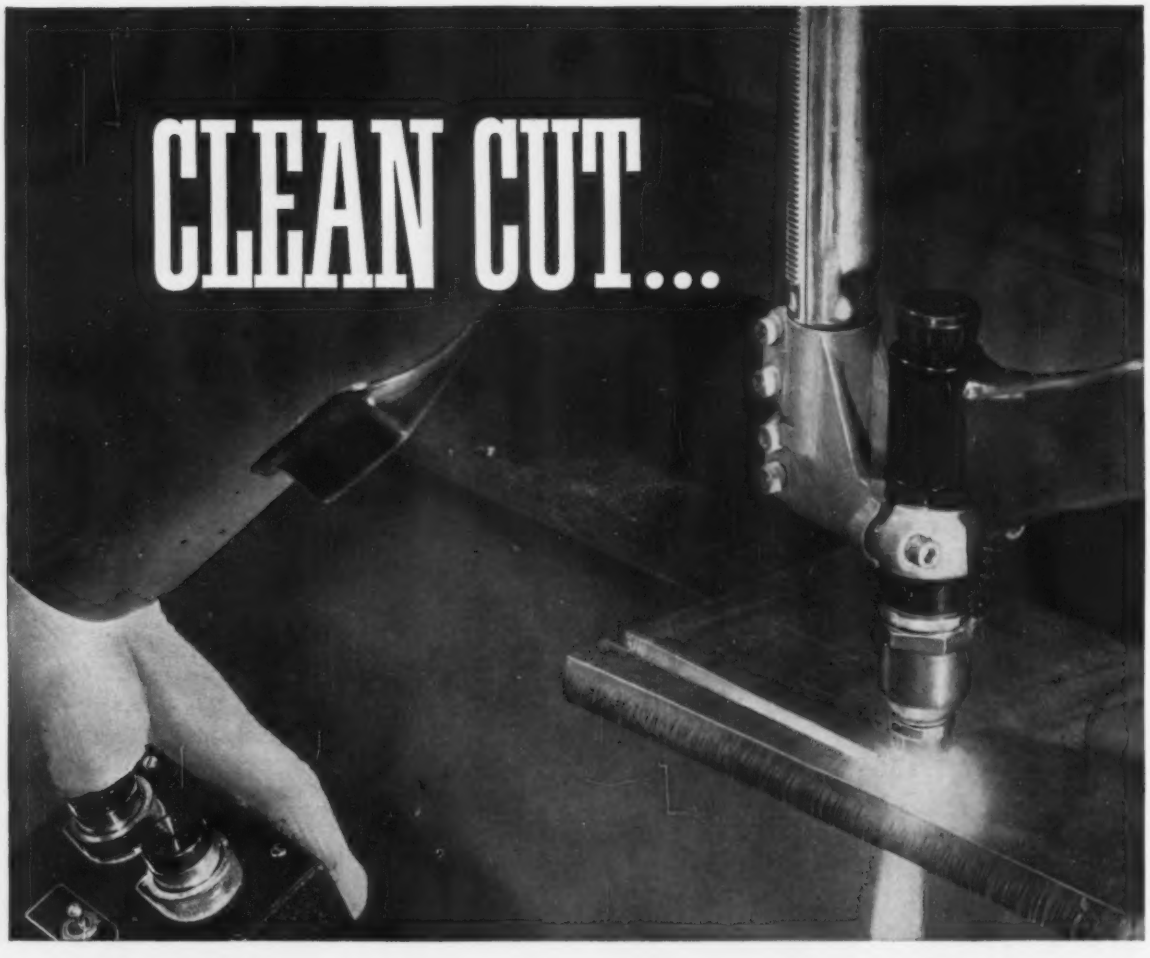
Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

BALDWIN BLH LIMA-HAMILTON



...HELIARC Cutting turns hours to minutes

Before: It took 1½ hours to chip an 18-inch hole in an aluminum dome ⅝-inch thick. NOW—The hole is cut in *one minute*—with HELIARC Cutting.

Before: A 54-inch diameter dome hole in ⅝-inch rolled aluminum plate required about 5 hours, with chipping hammers. NOW—Manual HELIARC Cutting does it in about 4½ *minutes.*

HELIARC Cutting employs an extremely high-temperature, high-velocity arc that gives cutting speeds up to 1000 inches per minute on ¼-inch-thick material. It makes saw-like cuts, either square or beveled, in materials up to 3 inches thick . . . *and,* you can take the torch to the work. HELIARC Cutting is equally effective on aluminum, stainless steel, magnesium, copper, carbon steel, or cast iron.

See for yourself—ask your nearest LINDE representative to *prove* that HELIARC Cutting slashes time and labor costs over conventional methods. Call your local LINDE office today! Or write Box I-111, LINDE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N.Y. Offices in other principal cities. In Canada: Linde Company, Division of Union Carbide Canada Limited.

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UNION CARBIDE

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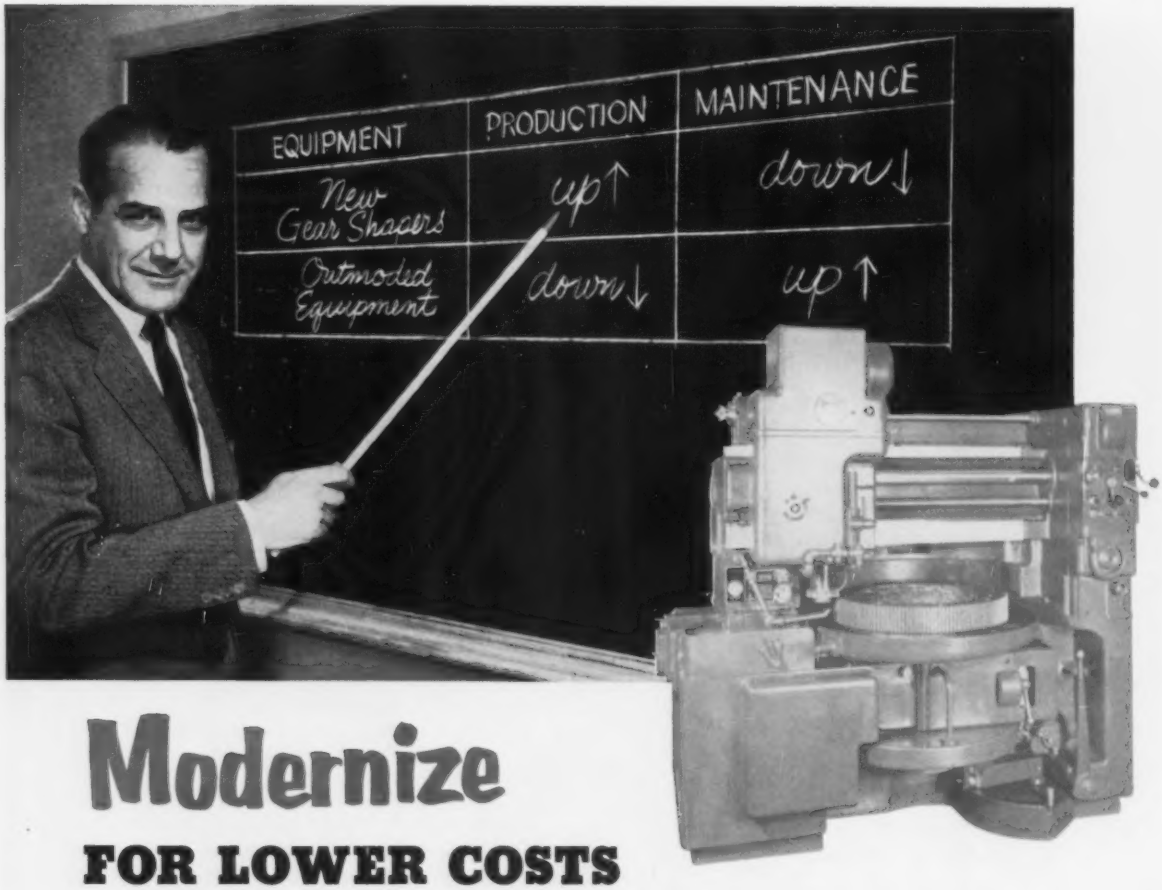

Modernize

FOR LOWER COSTS

with New Fellows 36-Type Gear Shapers

Two new Fellows 36-Type Gear Shapers can produce more than three or four older machines ...and give you extra production versatility, too. In many plants, new Fellows production equipment has lowered unit production costs by more than half, earned back its cost in three years or less.

Fast, accurate, and simple to set up for a wide range of jobs up to 36" pitch diameter, the Fellows 36-Type is ideal for short runs of varied parts as well as for long runs. Rigid, husky construction permits close tolerances on internal or external spurs, helicals, and herringbones, as well as an almost unlimited variety of cams, splines, and other non-involute shapes.

Why not ask a Fellows Representative to *show* you in your plant where you can cut production costs with newer machines? Write, wire, or phone any Fellows office.

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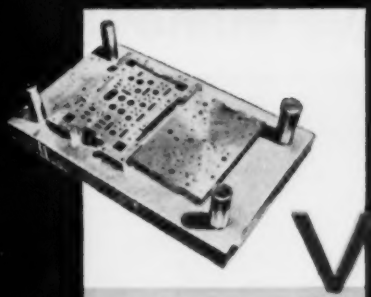
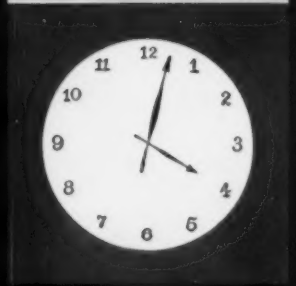
THE PRECISION LINE

Fellows *Gear Production Equipment*



vega



is a tough air-hardening tool and die steel that saves money and time by virtually eliminating the fitting and adjusting of dies after hardening. Its ability to resist distortion and size change is the most dependable in the industry. VEGA is the only steel that combines the machining properties of an oil-hardening grade with the safety in hardening normally found in air-hardening steels.

Prove it to yourself. Call your local Carpenter SERVICE-CENTER today for immediate delivery.

the *Carpenter* Steel Company, Reading, Pa.

Metal users, save money!

simplify materials control... standardize manufacturing processes

by standardizing on two alloy steels... 4340 and 4620

4340 THROUGH-HARDENING—Use AISI 4340 for moderate-to-heavy section parts... to get maximum strength, toughness, reliability. It's readily annealed to facilitate machining... can even be machined as heat treated in many cases. Welds readily with normal precautions. Responds reliably to heat treatment.

4620 CARBURIZING—Use AISI 4620 for all except the very heaviest duty carburized parts. It is the steel least apt to distort in heat treating. Case hardens easily with excellent case toughness. Shows uniform response to treating. You can treat mixed furnace loads . . . eliminate a re-heating cycle . . . *save more money.*

AMERICAN STEEL WAREHOUSE ASS'N.

Easy to Get... Both these steels are carried by Steel Service Centers from coast to coast . . . ready for delivery on a "next door" basis. For a list of these sources, write: 67 Wall St., New York 5, N.Y.

THE INTERNATIONAL NICKEL COMPANY, INC.
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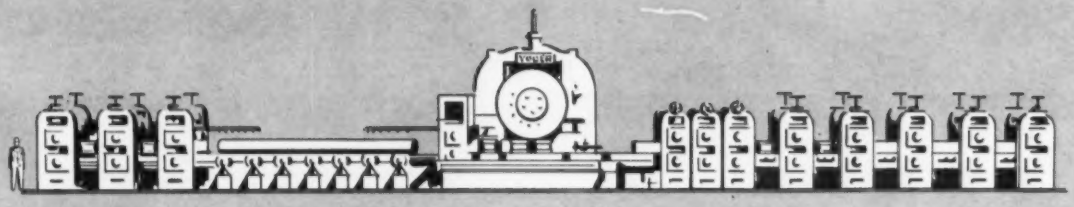
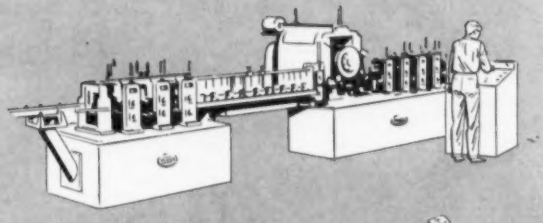
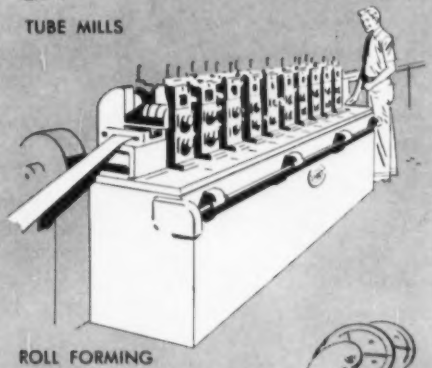


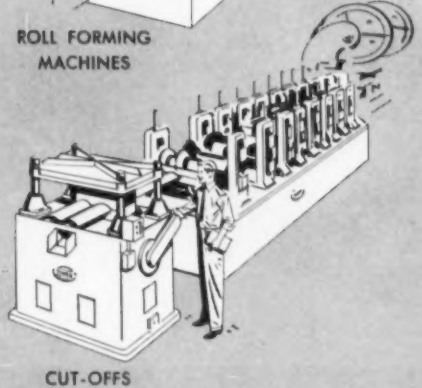
PIPE MILLS



TUBE MILLS



ROLL FORMING MACHINES



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...Complete equipment lines for heavy or light production!

Uncoilers, slitters, roll-forming machines, cut-offs, pipe and tube mills, special machinery for ferrous or non-ferrous metals are all made and engineered by Yoder to fit your specific requirements.

Special attachments and auxiliary units can perform additional operations such as welding, coiling, punching or embossing without extra labor cost while increasing production speed.

Let Yoder engineering and "know-how" help you get the most from your plant . . . with Yoder equipment. For full details, write to:

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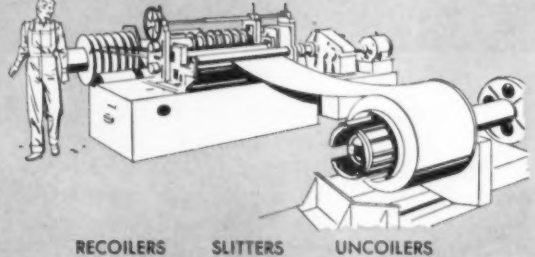

RECOILERS SLITTERS UNCOILERS

ENGINEERING **YODER** MANUFACTURING

PIPE AND TUBE MILLS (ferrous or non-ferrous)
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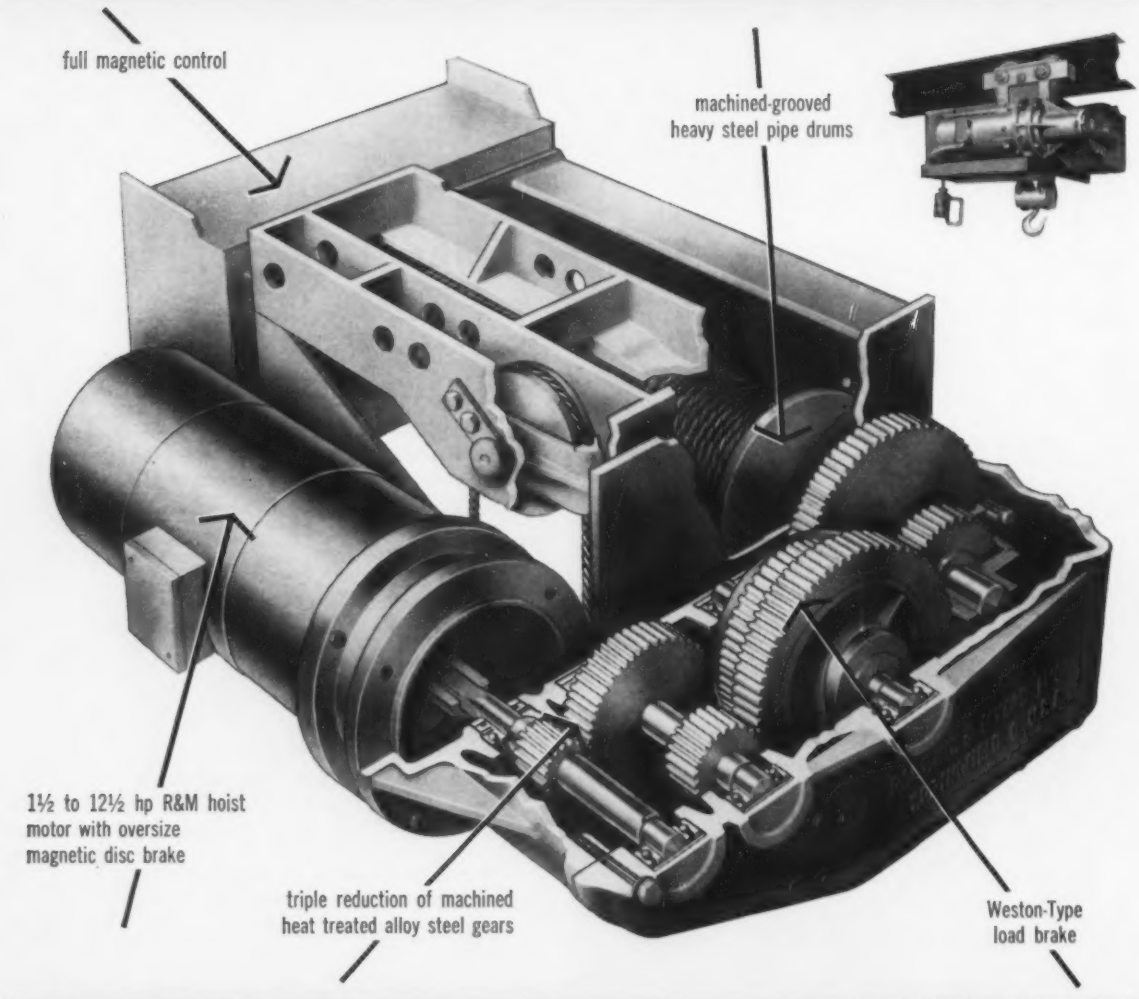
big hoist value



Type F standard low-headroom hoists excel in the heaviest, most severe service. Frame is solidly braced welded steel. Special weather and dustproof R&M hoist motor runs cool, has the highest time rating found in any standard hoist—30 min., 55° C. rise. And the oversize magnetic disc type motor brake requires virtually no adjustment. Full magnetic control with reduced push-button voltage is standard. With lug mounting, Type F-2 headroom is only 16½" in 2 ton capacity.

Capacities: ½ to 10 tons. Speeds: 10 to 54 fpm. Lug mounting; push, hand geared or motorized trolleys.

Robbins & Myers, Inc., Hoist & Crane Div., Springfield, O.

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ROBBINS & MYERS

hoists **cranes**

Request Bulletin 801-C today

KEYSTONE XL WIRE STUDY

SOLVED

Cost and Production problems by KEYSTONE XL Wire at Specialty Screw CORP.

ROCKFORD, ILLINOIS

flowability IS THE SECRET

Illustrated here are parts that were formerly expensive or difficult to manufacture. Specialty Screw Corp., Rockford, Illinois, solved these problems by switching to Keystone "XL" Wire for superior cold heading.

Read these case studies thoughtfully – see if you, like Specialty Screw, can solve difficult forming operations with "XL" Wire.

Of course, we at Keystone know that it takes much more than the finest quality wire to keep a satisfied customer. So we strive to give you the best in service – in meeting and keeping deadlines and delivery dates – in working with our customers to develop the wire exactly suited to their needs. Let us do the same for you! Call your nearby Keystone representative for complete details.

Keystone Steel & Wire Company, Peoria 7, Ill.

KEYSTONE
WIRE FOR INDUSTRY

SOLVED

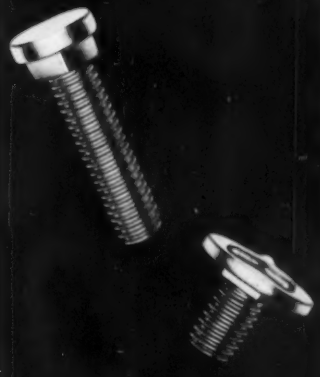
high cost of manufacturing valve assembly

Formerly this part was produced on a screw machine, taking 6 operations. Now, with Keystone "XL" Wire, the part is cold headed in two blows, then shaved and threaded – 4 operations. The net result is a savings of 65% in time and material.

SOLVED

quality control on rubber vibration mount

Before "XL" was used, heads cracked and there was considerable spoilage. Now, with "XL", this part is cold headed with virtually no rejects. The head is four times the diameter of the wire.



SOLVED

die cleaning problems

In order to get square shoulders on the parts shown here, the wire can't be gummy – it must have a good, dry coating. Otherwise, the dies must be cleaned frequently. "XL" solves the problem, and saves time and money!

Keystone Steel & Wire Company
Peoria 7, Illinois

COLD HEADING FACTS FOLDER . . . send coupon today! Folder discusses uses, applications, methods, technical facts, wire requirements.

Name_____ Title_____

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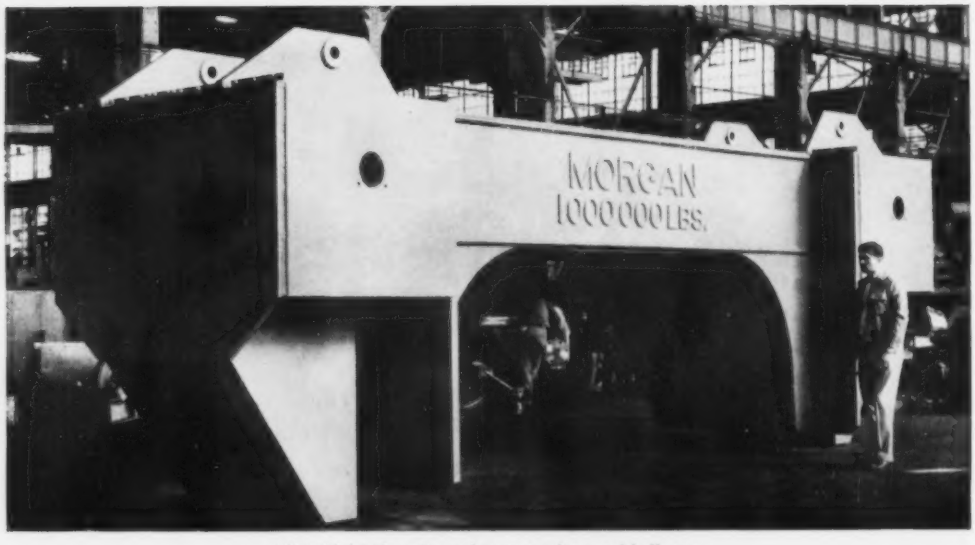
Weldynamics

ARC WELDING AT WORK CUTTING COSTS



All-Welded Lifting Beam for 500-ton hot metal ladle crane

More strength—less weight for world's largest ladle crane... *welded design does it for less money*

Maintaining highest possible strength with a minimum of weight is the prime objective in cranes like this. That's why welded construction is chosen.

Actually, 25% less steel is needed by welding these heavy cranes. This means material and fabricating costs are substantially lower. In addition, the crane is more maneuverable, availability higher, upkeep costs are lower.

Why not duplicate these benefits in your products now? Write us to show you how.

DESIGNERS! ENGINEERS! New 11th Edition Procedure Handbook of Arc Welding Design and Practice has 1300 pages of complete and up-to-date engineering data to help you develop efficient, low cost product designs. $3.00 in U.S.A. postpaid, $3.50 elsewhere.

The prime objective was to accomplish the highest possible pay load with assurance of uniform stress conditions and uniform material throughout with a minimum of weight at the lowest possible cost. These objectives were achieved by the extensive use of welded design throughout.

C. F. SIMMERS, Vice President, Engineering
The Morgan Engineering Co.

The World's Largest Manufacturer of Arc Welding Equipment

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S. S. Rickley, Representative, 300 Cedar Blvd., Pittsburgh, Pennsylvania

. . . Steel users may find tighter inventory controls the best hedge

"Let the other fellow carry the inventory" is a well-tried business principle that is taking on added significance for many manufacturers today.

As featured in a recent issue of PURCHASING WEEK, the cost of borrowing money is going up. Over the next six months, inventory growth financing will get tougher. Even now, the publication pointed out, there's a growing reluctance by bankers to make long-term, capital-goods type loans. The newspaper concluded that interest rates, too, are heading rapidly toward the high levels reached during 1957's tight-money period.

Faced with these new complications, steel buyers may well find continuance of recession-born, modified inventory policies the best hedge against tight money and higher interest.

For example, during the recent slump many companies proved to themselves that the varied facilities of steel service centers cut costs all along the line. They avoided long-term commitments and substantially reduced their need to borrow money. They released precious working capital for more productive purposes . . . freed valuable storage space . . . reduced handling costs and cut scrap loss, interest, insurance, taxes, etc.

This kind of cost-conscious buying is especially sound when you consider the unusually broad scope of Ryerson stocks, and the speed and dependability of Ryerson services. Buying cut-to-size steel—any kind, shape, size and quantity—gives you complete flexibility to meet quick shifts in production schedules. And you have the added assurance of getting uniform, high-quality steel—unequaled Ryerson *certified* quality.

Your Ryerson representative is well qualified to review the facts and help you get the maximum value for your steel-buying dollars. Call him any time to analyze your requirements with you.

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the INLAND Steel Family®

Principal Products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

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Sellout May Force Quotas

Steel buyers may be due for a rude shock when they start placing first quarter orders. One major producer of galvanized sheets has advised customers that it's establishing quotas beginning the first of next year. Whether any other mills have taken this step is not known, but December galvanized tonnage is pretty well sold out.

Freeze Gas for Vacuum

Already employed in a wind tunnel for missile research, a new technique produces such a low temperature that all the air in a chamber freezes to a solid leaving a high vacuum. Called cryo-pumping, the method promises substantial savings for research and industrial uses. The unit uses helium gas at —420°F as the refrigerant.

Carbon for Crane Wheels

Dry lubrication for flange wheels of traveling cranes is greatly reducing wear to wheels and rails. The lubricant, in the form of rectangular carbon-graphite sticks, forms a smooth film over the flange surfaces. The film does not spread over contact surfaces to cause loss of traction.

Wanted: Responsible Bids

Defense procurement officials and some contractors are baffled over problems of "responsible bidding." Both complain that experienced contractors usually fall in the middle area when trying for re-orders. Low bids often contain miscalculations. But they must be accepted. The eventual result, when project gets underway, is that supplemental payments are needed, boosting costs.

Medical Use for Stainless

A blood heat exchanger, similar to an oil cooler in an automotive automatic transmission, provides a new safeguard for patients undergoing complex open heart surgery. It can cool or warm patients in 6 to 10 minutes, instead of the hour it takes with ice packs. The 11-lb unit consists of stainless-steel tubes in a special steel jacket. Warm or cold water circulates around the tubes to bring the blood to desired temperature.

Users Get Steel Forecast

A new marketing device is being tested by one major steel mill. The mill is going to customers in one district with an analysis of what happened in the steel picture and a forecast of what is likely to happen to steel deliveries and operating rates. Idea is to stimulate sales and provide salesmen with a comeback in the event of a shortage.

Pressure Gear Lubricants

Though most gear applications require a liquid lubricant, there is growing interest in the use of extreme pressure greases of the calcium-complex type for heavy-pressure gear applications. Another research area being pushed is use of phosphate esters and chlorinated materials in tough jobs where high fire resistance is required.

Inspection Team: X-Ray, TV

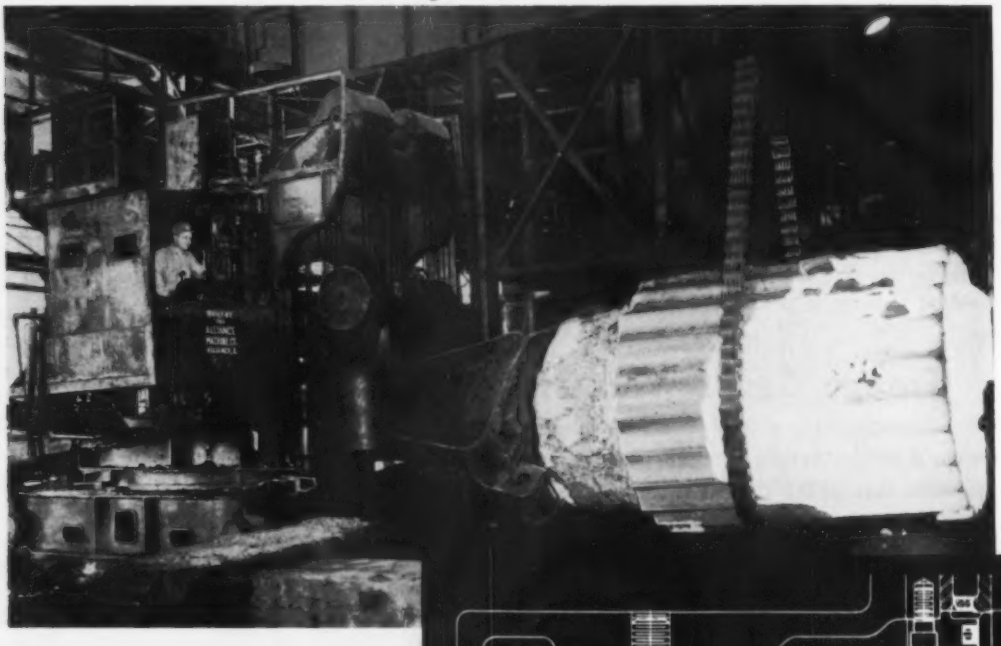
X-Ray and TV are combining to simplify production inspection in widely-varied areas of industry. Applications range from checking of solid rocket fuel to inspection in petroleum refineries and atomic energy plants. Advantage is possibility of continuous, visual inspection of products on moving conveyor.

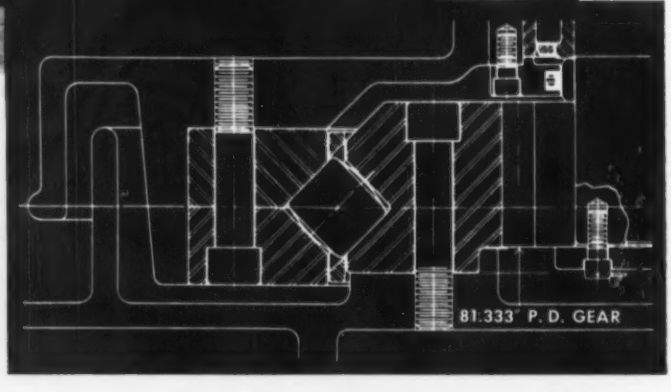
Forecast on Copper Talks

Some factors in the copper industry are betting on no strike this summer when contracts between Mine, Mill and Smelter Workers and the major mining companies run out. Insiders say Mine Mill treasury is at a low ebb and not able to support an extended shutdown. Possibility, they say, is strike against only one major producer during talks. If the market continues to firm this bluff could work. Best bet: Kennecot, because of its more drastic cutbacks at the height of the recession.

MESSINGER

Has Pioneered the Use of INTEGRAL GEAR BEARINGS





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"X" ROLLER BEARING

80.81" X 107.50" X 7.00"
3.000" DIAMETER ROLLERS

Applied to the Rotating Mechanism of a large forging Manipulator built in 1943 by the Alliance Machine Co. for Erie Forge and Steel Corp. On its **fifteenth anniversary** it was still demonstrating the **quality** of Messinger Engineering. Let us help you with **your** next bearing problem.

Smoothing Industry's Pathway ...*for Nearly Half a Century*

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BALL AND ROLLER BEARINGS • FEATHERWEIGHT TO HEAVYWEIGHT

Get Set for a Business Boom It Will Bloom in 1960

Groundwork is being laid now for a new business peak. It will be in full bloom in 1960.

Here's a rundown on the forces that are working to push business to new highs.— By Tom Campbell.

▪ The groundwork for a new boom in business was laid some months ago. It will blossom out sometime late in 1959 and reach full bloom in 1960.

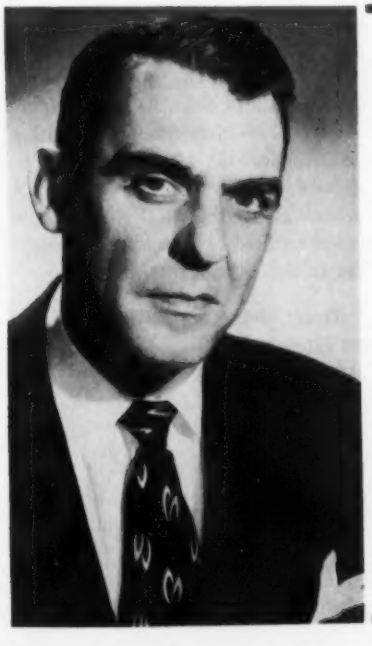
Right now worry warts are sounding the alarm over a housing dip and the slowness of new plant and equipment to turn upward. Others are using crying towels for the 1959 cars before the public gets a chance to see and drive them.

Needless Worry—Still other pessimists are worried about actions of the Federal Reserve Board in its delicate attempt to stem what it calls inflation while striving not to cause deflation. The FRB isn't the towering giant it used to be: Its actions will not ruin the country nor will its moves nip in the bud the present business improvement.

Anyone who talks about the future takes a big gamble, but with evidence piling in it is clear that the momentum of the present upswing will go a long way over the next 8 to 9 months. The abrupt and—to some—surprising uptrend from the recession's low in April has created a forward force that lack of confidence, FRB action, and dissenters will not be able to stop.

A Prediction—Before the year is out the FRB index of production will be in excess of 140. Its temporary slowdown in September, when it rose just one point to 137, is understandable: Auto assemblies were almost zero due to strikes; the steel market improvement had not reached its present level, and manufacturers had not sensed the impending gain in their orders.

There will be no unusual spurt accompanied by "shortages" of metals and machinery—yet. There is plenty of capacity left to take care of those who want more steel, more aluminum, more copper, more machine tools, more cranes, more machinery, and more electrical equipment. But it is true that buyers are quietly on the march; at least those buyers who have been



Note to P.A.'s: Watch Your Step

"What seems to be a safe and happy hunting ground for the purchasing agents today may be rough going a few months hence. That doesn't mean we are in for shortages, premium prices, and high-level haggling days again soon. They will be here some time again but not in the near future. There is more than an even chance that —relatively—many buyers not now in the market will be in trouble next year. They will get what they want but they won't get it WHEN they want it."

—Tom Campbell, Editor-in-Chief
The IRON AGE

through this before. The depletion of inventory has been halted except among oil and gas companies, some structural fabricators, and railroad car and repair shops.

Strong Points—There are many positive factors working to keep the economy headed upward, but the rate of ascent may not be as steep as it has been since last May. A hesitation—if it comes—in December and early January will be partly seasonal and partly recapitulation until Congress comes back loaded for bear and anxious to spend again —and again.

But Congress will have plenty of help in its attempt to hoist the economy. Areas not now overly active should pick up steam quickly after the end of the year. These would include: Oil and gas production and exploration; railroad buying, which always comes to life after everything else picks up; defense buying which will reflect higher prices and more missile purchases; spring seasonal pickups which will be more pronounced because we are in an upswing.

P. A.'s Dilemma—There is a reluctance among many to agree that things are better. We mean better productionwise, productwise and profitwise. From a practical standpoint the old-timers in the purchasing game are studying closely their stocks, their estimates of next year's needs, the tenor of the front office, and what chance they have to get their way. Many purchasing men would have reached for more materials long ago if they had had the final say. Now that the top echelon is seeing improvement it is easier to get approval on purchases.

Because many are quietly ordering further ahead and because accumulation of stocks somehow isn't always fast enough when orders are improving, we can look for continued economic strength for the next 6 to 8 months. By that time a lot of metalworking production may be slowed up unless supplies of steel and aluminum are on hand. It is true that steel and aluminum are only part of the picture but the lack of either metal in an upward swing can slow down the production of machinery, autos, tools, housing, fabrication, highway construction and a host of other metalworking activity.

Strike Hedging—Because we are not the only ones who know this you can be sure that many large—and small—firms have put the word out to hedge against a steel and aluminum strike next year. Neither labor nor steel officials are willing to talk about their coming hassle. That figures. Neither wants the other to get a look at its strategy. But of this you can be sure: The steel and aluminum industries are going to try to avoid a costly contract. It will take a show of strength on both sides to see who, if anyone, is bluffing. The truth is: Neither is bluffing and that's why there will be a substantial pickup in buying by next May and June in steel, aluminum, machinery, and other items.

Around the first of next year there will be reports of cost cutting by government. These will be reports and not much more. The deficit in this fiscal year may not hit $12 billion but it will be at least $10 billion. The deficit in the fiscal year starting next July 1 will run as much as $3 to $5 billion. Government spending is already keyed to a high point, higher than in the past year, due to commitments made last year and the year before. Defense and foreign aid, salary costs, higher prices for normal government requirements, continued unemployment aid, another peak in old age pension payments and a sharp runup in Federal highway expenditures are a few of the items which assure more government spending.

Other Public Spending — States and municipalities will spend lavishly next year also. Roads, schools, and other improvements have been approved. Services in many local governments are inadequate to take care of new developments and increased population.

The fear of a sharp drop in housing seems to be on thin ground if one expects it soon. If tighter money affects housing to the point where starts drop from a 1.2 million rate to 1.05 million rate—as some think —the drop will not take place until sometime next year. Present commitments assure strong housing programs well into 1959. And that means good sales for appliances and autos, both of which accompany housing uptrends.

Slack Taking—By the time housing dips—if it does, and there is no certainty it will—other economic supports will be stronger, such as new plant and equipment, machinery sales, railroad purchases, and oil and gas expansion. At present more than 1 million tons of line pipe are held up. Chances are they will be released next spring.

Farm Spending Helps—The better farm outlook and spending will continue, for many months, to strengthen sales of farm implements, appliances, barn and home improvements, and autos and trucks. Farm money now being spent is making the difference between good and mediocre business with many manufacturing firms in the midwest. That in turn is sending excellent replacement business to steel mills, warehouses, and machinery firms in those cases where farm goods suppliers have run out of materials.

There will be some short-term squalls but they shouldn't be confused with the long-term outlook over the next 18 months to two years. Talk of controls is increasing —especially from the FRB—where veiled reference has been made to possible credit controls. It is not probable that the FRB will institute credit controls over installment buying in the near future.

Don't Help Competitors — What all buyers of metals and machinery must watch: Don't take too long to determine what you ought to buy or it might be too late in relation to your own manufacturing schedules. Competition will be quite severe. A pennywise pound foolish carryover from earlier this year could give the business to your competitor.

Tom Campbell on the Business Outlook

Steel: Output this year will be 85 million ingot tons. Next year's production will range between 108 and 111 million tons. Upsurge in second quarter next year, with average 85 pct or better. Minimum strike 5 weeks, maximum strike 8 weeks, with smaller package than in 1956.

Housing: No slowup until well into next year. Total starts this year 1.13 million. Next year no less than 1.05 million with prospect of 1.15 million starts. More if more money is voted.

Oil & Gas: Resting now. Big pickup next year. Will start ordering steel before spring of 1959 when there will be a rush for oil country goods and line pipe. This will tighten up plates and seamless tubing. The surge will come when everyone else is in the market for steel, machinery, aluminum, labor, and freight car space.

Railroads: After all the hoopla about what the rails would do if they got legislation etc. they haven't done a thing. But next spring they will need more rails and accessories. Now material for repair of cars in their own shops is being ordered in larger quantities. But there is still no sign of a real uptrend in railroad buying: it will come before next May and will help tighten considerably the plate and structural market.

Highways: Off to a big start this year with substantial expansion next year. Plates and structurals will feel the influence by spring. This support will be quiet but continuous for the next several years.

Appliances: On the way out of the doldrums. Better sales next spring but before that time substantial gains from the low point earlier this year will be registered because of increased housing. Unwieldy stocks have been worked off in most areas. Producers are still cautious and will not overproduce.

New Plant & Equipment: Will run $30 billion for the year, down from last year's record $37 billion. But the volume this year was better than the $30 billion because some prices were shaded from last year's quotations. Next year may be only $31 to $32 billion but improvement will start in the second quarter. Real progress will come in the last half of 1959 with a marked upsurge in new plant and equipment buying in 1960. There is still much obsolete equipment which must be replaced. With labor costs bound to keep going up most managers will take a second look at appropriations early next year.

Defense: No matter what you hear, actual spending is on its way up. It will top $42 billion next year, not counting foreign military aid. Higher prices, previous commitments and more missiles will push the figure up. Don't confuse spending with appropriations next year. An attempt will be made to keep the latter down but spending is bound to go up $2 to $3 billion from this fiscal year's total of close to $40 billion.

Other Government Spending: More oldsters will take their Federal pension than at any time in recent years. Congress is sure to pass bills to take care of more public housing and to raise the ante for government-insured housing mortgages. The Democrats will have the power and they are bigger spenders than the Republicans.

Autos: With fingers crossed we estimate a 5.4 million sales year next calendar year 1959. Personal guess is higher because of the chance that 1959's will do better than expected and if they don't, early introduction of 1960 models will do the trick.

Machinery: Electrical machinery sales improving fast now. Heavier machine sales improving but at a slow pace: better volume by spring. Machine tools must wait until next spring to get a real shot in the arm. But machinery generally is on its way up now and will continue to show improved sales. Banner year: 1960.

Miscellaneous: Aluminum will follow the pattern of steel. Copper will follow suit. Iron ore shipments will increase substantially next year: foreign imports from South America and Canada will regain most of their loss this year—it was far less than domestic curtailment. Refractory material is in for a big boost next year. Rolling mill makers may have a heyday in the form of repair and renovation orders because of the high cost for new plants. Chemicals on the way up now after a tough year and a half. Engineers will be short next year and so will recruits for top management jobs. There will be much switching by younger managers who are not waiting too long to make their mark.

Metalworkers See End of Slump

Poll at Metal Show Turns up Optimistic Outlook

Heat treat equipment maker says more customers are getting down to cases.

Press builder notes that serious inquiries are on the way up. —By T. M. Rohan.

■ The upturn in metalworking is moving rapidly in the fourth quarter and may still pull 1958 up from the status of a miserable year to merely a poor one. A spot check of sales officials gathered in Cleveland for the Metals Show last week showed them to be universally agreed that the revival is in full swing.

In heat treating equipment, it started in August, according to Al Koch, Surface-Combustion Co., Toledo, O.

Down to Cases — "More and more of our customers are now talking in the final stages and getting down to details of installations they have wanted to make for some time," he says. "Many of them have just been holding off until things started to pick up. We are still quoting 4-6 weeks delivery on standard equipment so production isn't in full swing."

The year 1958 has already been one of the better years for Cyril Bath & Co. of Cleveland, stretch press builders, and 1959 looks even better. This firm attracted wide interest with a model of a new 50 ton stretch former being built for Convair.

Inquiries Are Up—"Our requests for quotation are way up in the last two to three months," says Sid Hassel, sales engineer. "We are also down to talking prices and installation details with customers rather than just general discussions. If all the inquiries materialized into business, we'd be booked for years."

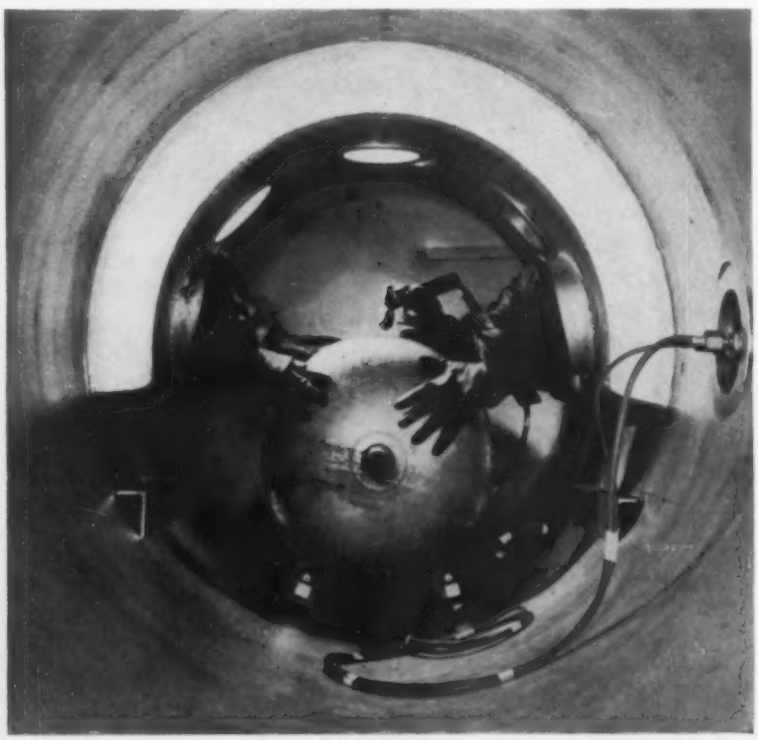
The excitement over vacuum meltings has permitted the six-year-old High Vacuum Equipment Corp. of Hingham, Mass. to increase its sales every year since its founding.

Short Slump — "Our recession only lasted the first two months of this year." says James Bishop, Jr., sales engineer. "1958 will still end up 10 pct better than last year."

In electric motors, too, the revival seems to be in full swing. "Our inquiries are decidedly up and the outlook is brighter," says Donald E. Vanerstrom, Cleveland district manager for U. S. Electrical Motors Inc, of Los Angeles. "We are now in a good fourth quarter which will surpass the others by a long way. Our hottest item now is a new alternating current system where we can run two motors at the same speed."

Good Attendance—During the five-day show, more than 60,000 visitors were clocked through the gates, setting a new high for the meet. There were quite a few visitors from Europe, India, and other foreign lands. New president for the 30,000 member society is Dr. Clarence H. Lorig, technical director of Battelle Memorial Institute, Columbus, O. No managing director has been selected as yet to succeed the late W. H. Eisenman.

The Society's Gold Medal award went to Dr. Albert J. Phillips, vice president and director of research, the American Smelting & Refining Co. It was for his "outstanding metallurgical knowledge and great versatility in the application of science to the metal industry."



INSIDE JOB: Welding of tantalum liner for Pfaudler reactor vessel is done inside vacuum purge "dry box." Haynes Stellite made tantalum.

What Makes Cost Cutting Programs Work?

Setting up a cost cutting committee isn't enough. For worthwhile results it should operate under these conditions:

Complete Authority: Include representatives who speak with authority for purchasing, engineering, production, personnel, sales, and top management.

Continuous Operation: Hold regular meetings where definite projects are set up. Issue regular reports on savings effected.

Freedom from Details: Committee must not be buried under avalanche of reports and minute details. Avoid "Committee-itis." All members should pre-digest information and present suggestions in clear, workable form.

Plant-Wide Support: All employees and supervisors should be made cost-conscious. They should be encouraged to turn in cost-reducing ideas.

Cost Review Power: Committee should review fixed costs as well as cost cutting methods. It should check established manufacturing methods, budget requirements, manpower needs.

Management Approval: Management must give committee full backing, keep in close contact with it, study its minutes. All departments must be made aware of the committee's role.

Include Office in Cost Cutting

Checking office efficiency can aid in reducing costs, AMA Conference speakers say.

Suggestions: Adjust personnel needs to fit business levels, measure departmental work volume. —By K. W. Bennett.

■ "Any company can cut its expenses 5 to 10 pct, if it must."

That was the challenge thrown down by a speaker at the recent Cost Reduction Conference of the American Management Association in Chicago. Here are some of the ways to reduce costs suggested at the conference:

Check Front Office—Assuming most businesses have gone after costs full tilt in the past 12 months, it's still suggested there are some "sacred cows" which have been spared. One cost cutter reports his studies suggest the average executive or white collar worker seldom exceeds 50 pct effectiveness. One serious proposal from an eastern manufacturer: Industrial engineering crews move out of the plant and into the front office for some work sampling.

Don Copell, winner of the Gilbreth Medal in 1948, suggests one likely area in which to start is the executive tier. And he adds the individual private secretary could be eliminated as a mark of executive distinction.

One secretary can serve several executives and still have 25 pct of her time free, he believes. Checking executive output and work practices to stimulate output, is another suggestion. In many companies, Mr. Copell points out, costs other than manufacturing represent 90 pct of total cost.

Measure Work Volume—A. B. Toan, Jr., of Price Waterhouse, follows through with the advice that continuing checks be made of indirect labor, as well as sales and administrative personnel. Companies should, he believes, adjust personnel levels there to reduced business volume as they do in manufacturing departments.

His suggestion: Each white collar department should measure its work volume and tailor its personnel allotment to that work volume. A billing department's manpower would be checked against the number of invoices it handles. The hiring section of the personnel department would be checked against the number of new employees hired.

Review Budgets — Another sacred cow AMA cost-cutters led to the block: The annual budget. When business volume begins to sink, they believe, the whole budget must be reviewed immediately. Variable costs must be checked individually to see that they sink at a rate equal to the sales dropoff. Fixed costs must be overhauled to find if they are really fixed. Some plants can farm plant maintenance to outside firms.

Peak-load problems in data processing or bookkeeping can be sent to an outside agency. This saves building up a large in-plant clerical staff with a constantly swelling budget.

Coal Men Show It Can Be Done

Wages, Prices Hold the Line in Decade of Inflation

Coal industry labor relations have set an example others would do well to follow.

Mature attitude helps meet competition, beat the inflation spiral.—By G. J. McManus.

▪ Industry is paying close attention to this year's wage talks between the United Mine Workers and the Bituminous Coal Operators Assn.

The coal industry is one of the few that have found a way to lick cost-price inflation.

Over the past 10 years, the coal record looks something like this:

1. Little or no increase in prices.
2. Little or no increase in the wage cost per ton of coal.
3. No general strike since 1950.

It Had to Be—You can explain all these achievements simply by saying they were forced by market conditions. Faced with rising competition and shrinking sales, mine operators had to hold prices down; mine workers had to scale down their demands.

This is perfectly true but it is also true that price stability could not have been achieved without remarkable changes in the attitudes and actions of all parties in the coal picture. In 10 strike-torn years prior to 1948, the price of coal more than doubled. Wages talks were hot and loud.

Older and Wiser—Possibly the biggest change has been a general mellowing of coal labor relations. This has been partly a question of new maturity on both sides. In small things like compensation claims mine operators no longer deny the union access to records. Working conditions have been improved.

On his side John L. Lewis has shown a unique appreciation of the economic facts of life. During the coal sales slide, the Mine Workers went for two- and three-year stretches without wage hikes. This restraint is a measure of Mr. Lewis' strength as well as his perception. Few labor chiefs would dare stand still for a long wage freeze, no matter what the condition of an industry.

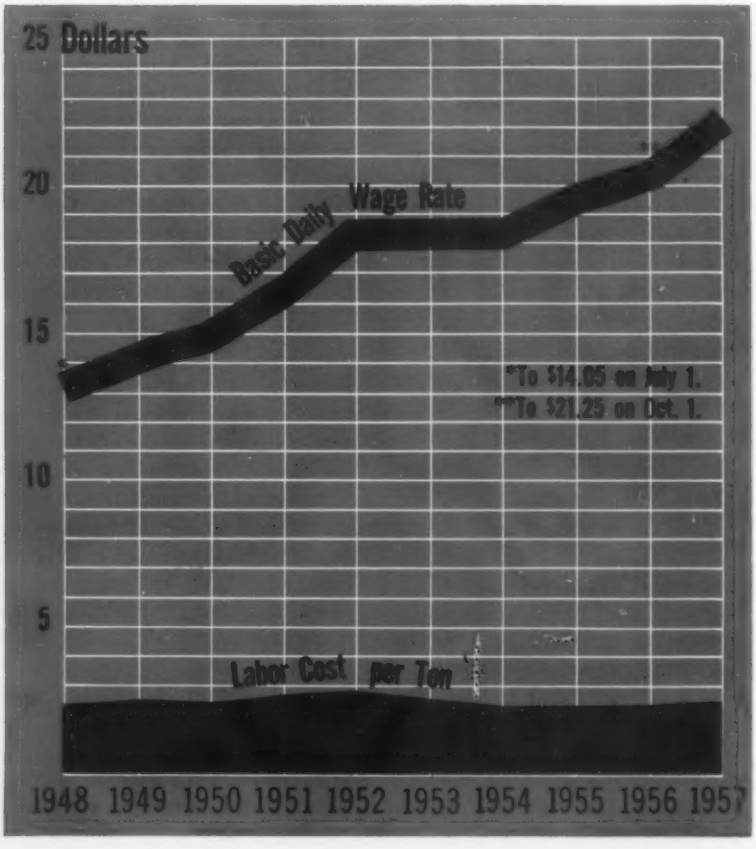
Operators Appoint Spokesman—A second factor in coal harmony is the installation of more orderly negotiating mechanics. At one time negotiations were handled by large unwieldly conferences. Now operators are represented through the Bituminous Coal Operators Assn. by one man, Edward Fox.

Mr. Fox has the role of a baseball commissioner for the operators. He meets on a continuing basis with the Mine Workers, discussing wages among other subjects. There is no set time for pay negotiations. The industry operates under an open-end contract. Either side could have raised wage issues any time after last fall, when the contract had run one year.

This whole arrangement makes

Coal Wage Rates Rise

But Labor Cost Per Ton Is Stable



for quiet, orderly bargaining.

Mechanizing Trend—Even with good labor relations, the coal industry could not have survived without a strong mechanization effort. In the past 10 years, mechanical loading of underground bituminous coal has increased from 58 to 85 pct of the total. Continuous mining machines have taken over 13 pct of the total mechanical loading.

These and similar moves have had two effects. First, they have increased startup costs for a mine from about $1 a ton to $10 a ton. Secondly, they have raised the daily output of the miner from 6.3 tons in 1948 to 10.6 tons in 1957.

The Key—This productivity gain has been the key to price stability in coal. The basic wage rate has risen from $13.05 in 1948 to $22.25 in 1957. But because of the productivity gain, the wage cost per ton has risen only from $2.277 in 1948 to $2.308 last year.

The mine operators have had to swallow some added costs. Their profits have dropped sharply in the past 10 years, even allowing for reduced volume. But no amount of profit squeezing could have held prices down without productivity gains.

Labor Support—Mr. Lewis and his union have long been interested in productivity. The union has wholeheartedly backed mechanization of the mines since the Thirties. It has stuck to this position even though it has meant a reduction in soft coal employment from 400,000 in 1948 to 200,000 in 1957.

In the earlier years, productivity was encouraged by the union but did not prove to be a limitation on wages. There was a 24 pct gain in output per man from 1938 to 1948 but coal prices more than doubled.

No Simple Formula—Over the last 10 years, wage increases have matched productivity gains pretty closely. The coal industry has no simple formula for measuring productivity and automatically applying wage increases. As the present talks indicate, there is still bargaining. But there is more respect for the idea that wages must be related to ability to pay.

How much longer will coal continue on its present stable footing? That question may be answered soon. The average price of coal at the mine has drifted downward and there is pressure for further reductions. John L. Lewis reportedly has blocked recent attempts at general price cuts.

The interest of Mr. Lewis in things like prices and production has led some observers to speculate on a new concept of the role of unions. In future negotiations, it won't be union against management, they say. It will be company management and labor management.

Low-Down on Welfare Plan Law

■ If your company or union has a welfare or pension plan, time is drawing short. The new Welfare and Pension Disclosure Act goes into effect Jan. 1. Here is what the Dept. of Labor advises:

Administrators of 900,000 such plans must file their first reports with the Department by next April 1. This will include a description of the plan, which must be filed only once as long as the method of operation remains unchanged.

Second Report—In addition, an annual financial report is required to be filed within 120 days after the end of each firm's fiscal calendar or policy year ending after next Dec. 31.

The Act covers welfare or pension plans established or maintained by employers, by employee organizations, or jointly by both and which provide:

1. Medical, surgical, or hospital benefits.

2. Sickness, accident, disability, death, or unemployment benefits through the purchase of insurance or otherwise.

3. Retirement benefits by the purchaser of insurance, annuity contracts, or otherwise, including any profit-sharing plan that provides benefits at or after retirement.

Forms Coming—Forms on which managers of these plans may file reports are being printed by the government. Use of the forms is not necessary, the Labor Dept. says, but managers of the plans who provide all the information requested on the forms will be considered as having complied with the law.

The forms, drafted after consultation beteen the Department, management, and labor, will cover both reports and will be sent soon to all 62 federal offices across the country.

Penalty Imposed — The Labor Dept. adds that reports are required from managers of all plans covering than 25 employees. Sentence of up to six months in jail or a $1000 fine is provided for failure to file the reports or to make it available to beneficiaries.

Exempted from the law are plans covering no more than 25 employees; those administered by Federal or state governments or their political subdivisions; those established solely to meet requirements of workmen's compensation or unemployment compensation laws; and plans administered by certain fraternal benefit societies as a corollary to membership.

Stainless Picks Up Growth Pace

Producers are pulling out of the slump with plans bigger than ever.

Specter of a nickel shortage will no longer hamper promotion efforts.

▪ Stainless steel men are confident that the industry's historical pattern of doubling production every 10 years will continue.

To make up for this year's low production—an estimated 875,000 net tons compared to a 1956 record of 1.2 million—some busy years lie ahead for the industry.

The Outlook — Fourth quarter projections indicate the upturn has already started. Each of the last three months of 1958 is expected to be better than the September figure of 84,658 tons, top month for the first three quarters.

Higher output should continue through 1959, when yearly production is expected to hit 1.2 million tons. If steel labor troubles are held to a minimum next year, stainless production could reach 1.3 million tons.

Promotion Overdue — Looking farther ahead into 1962, the industry figures conservatively on a 1.4-million-ton year. This estimate assumes normal growth of existing stainless markets.

A strong promotional effort in the stainless steel industry is long overdue, producers feel. The nickel shortage which plagued the industry in recent years, limiting production, is no longer a problem. Now there is the possibility of breakthroughs in several major markets.

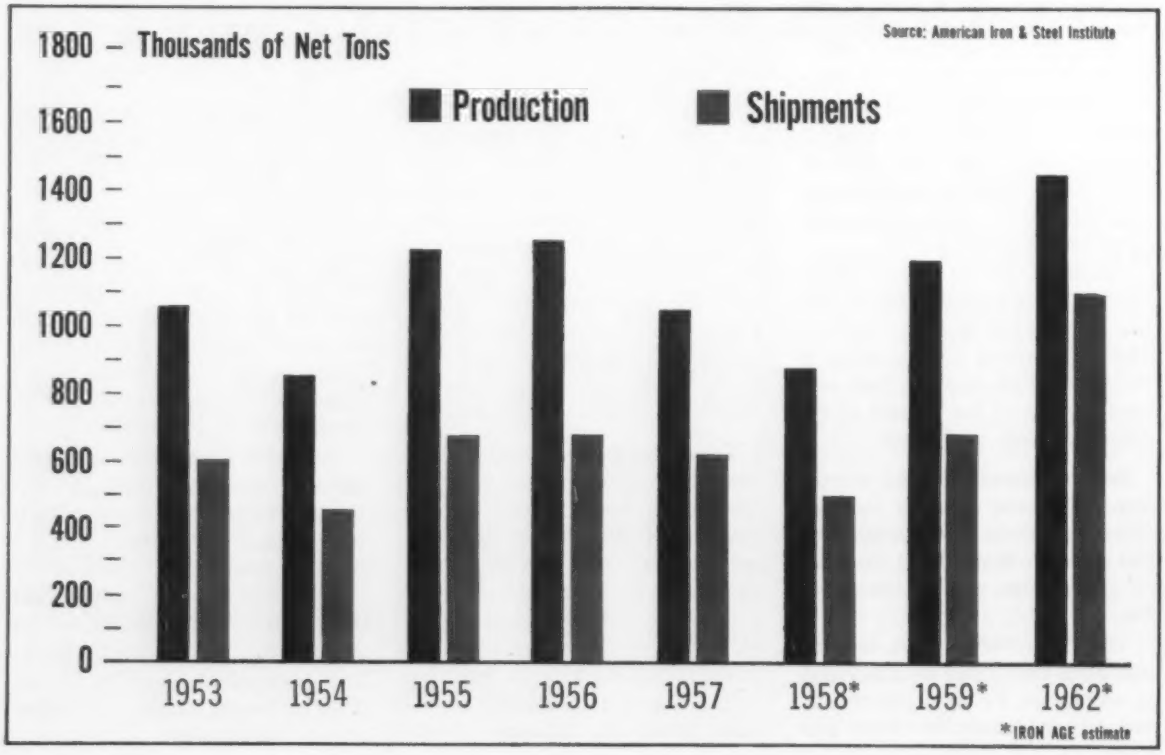
Detroit Prospects—An increase of stainless use by automotive producers, for instance, could send the sales curve right off the graph paper. Stainless use on 1959 autos averages about 30-35 lb per car. This represents an increase of about 15 pct over 1958 models.

Many stainless executives are confident that the stainless bumper sooner or later will become a reality.

In other markets, use of stainless seems sure to grow. Some forecasters believe shipments to the construction industry will easily reach 60,000 tons in 1962. Stainless will run the gamut from major structural components to gutters and lightswitch plates.

Added Support — Other major markets where stainless can be ex-

Stainless Steel: A Good Year in '59



pected to continue at present rates or better include electrical machinery and equipment, fasteners, utensils and flatware, food processing and restaurant equipment and appliances.

The aircraft industry is a question mark. Shipments to planemakers ran under 26,000 tons in 1957. Some analysts have predicted aircraft stainless use of 75,000 tons a year in the next 3 to 5 years, but other industry executives fear this is far too optimistic. A lot will depend on airline experience in civilian jet operation.

Economy Committee Quits

The Citizens Committee for the Hoover report announced that it is cashing in its chips with a record of 64 pct of all recommendations for federal economy adopted by Congress and the executive arm of government.

Former President Herbert Hoover, head of the Commission, estimates the savings from these inovations will total about $3 billion per year.

The Citizens Committee was formed as a private, voluntary organization to support the Commission's proposals. It was active during the first investigation from 1949 to 1952, under the chairmanship of Dr. Robert L. Johnson, president of Temple University. It was then on "standby" until the second commission investigation began in 1955.

Piercing Mill Sale

Birdsboro Steel Foundry and Machine Co., Birdsboro, Pa., will supply a piercing mill and accessory equipment for piercing alloy and stainless steel tubing to Timken Roller Bearing Co., Canton, O.

It is scheduled for delivery in June, 1959. It will be the second step in production of tubing for Timken roller bearings.

This is the first piercing mill built by Birdsboro. They are now offering a complete line of seamless tube mill equipment.

Steel Profits Gain

But They Still Lag Behind 1957

▪ Steel earnings improved last quarter, but still lagged behind 1957 levels.

Most major steel producers bettered April-June profits in the September quarter. The exceptions were Bethlehem, Kaiser, Republic, Youngstown, and Wheeling. Inland's second and third quarter earnings were about equal.

Losses Disappear—Three companies—Detroit Steel, Copperweld, and Sharon — exchanged second quarter losses for third quarter profits. Another, Pittsburgh Steel, lost less in third quarter than it did in the second.

But, despite the general improvement in steel earnings, few companies have a chance of surpassing 1957 profits this year. Of the 22 firms below only ten beat third quarter '57 results this year.

Nine-Month Contrast—Comparing nine-months results this year and last presents an even sharper contrast. Through September only one company—Continental Steel—has earnings above the same nine months in '57.

The August steel price rise clearly helped third quarter earnings this year. At National Steel, for example, September quarter earnings were greater than the combined total for the first and second quarters.

Yet the month lag between the wage increase and the price rise had adverse effects for many steelmakers. At Bethlehem third quarter earnings dipped below those of the second quarter.

Bethlehem president Arthur B. Homer noted, that after the wage increase, "we had to operate for a whole month without a price increase."

Steel Earnings: 3rd Quarter Comeback

COMPANY	Third Quarter 1958	Second Quarter 1958	Third Quarter 1957
U. S. Steel	$74,922,924	$73,224,051	$97,555,683
Bethlehem	26,240,677	29,003,419	40,051,465
Republic	15,184,641	15,321,096	20,121,297
Jones & Laughlin	6,698,000	4,034,000	11,377,000
National	10,892,433	6,527,762	8,041,074
Youngstown Sheet & Tube	3,641,906	4,236,641	9,890,247
Armco	12,876,598	11,626,179	17,600,617
Inland	12,118,009	12,118,584	13,382,172
Colorado Fuel & Iron	1,607,143	1,063,388	3,295,509
Wheeling	1,842,000	2,464,000	1,714,000
Sharon	66,484	(735,721)*	213,852
McLouth	2,766,781	1,862,800	2,166,371
Kaiser	(1,922,742)*	2,236,000	3,445,155
Detroit	306,533	(58,161)*	159,889
Crucible	854,374	226,932	(225,119)*
Pittsburgh	(291,638)*	(563,778)*	654,049
Granite City	2,320,977	1,841,401	1,623,303
Allegheny Ludlum	1,155,429	646,067	1,983,861
Alan Wood	538,650	305,988	(142,086)*
Copperweld	898,028	(94,633)*	157,045
Acme	1,631,088	1,137,369	1,447,145
Continental	1,021,236	1,088,915	530,475

* Indicates loss.

Can Red China Double Steel Output in '58?

By pushing both large and small-sized steelmaking plants, Red Chinese aim to double steel tonnage in a single year.

Revised goal for 1958 is 11.8 million tons.

▪ Red China is out to double its steel output this year.

The Chinese have revised their 1958 tonnage target upward to 11.8 million tons, double the 5.9 million tons produced in 1957.

Earlier this year China was aiming at a 1958 production of 7.7 million tons. (See "China's Industrial Target," The IRON AGE, Aug. 7, p. 41.) Hitting the new tonnage goal of 11.8 million tons will create "an epic of steel production," the Chinese say. They believe it would eclipse all previous boosts in steel output made anywhere in the world.

Small Furnaces Help—Important in reaching the Chinese goal is current expansion at the Anshan steel works and the building of big, new production centers at Wuhan and Paotow. But also important is the increase in small and medium-sized native iron and steel melting furnaces. These are rising all over the country.

With this intensified use of abundant local labor and natural resources, Chinese iron and steel output is steadily climbing. Large numbers of experienced personnel are being released from established mills to help the newly created small furnaces.

Traveling Workers—Some 6600 administrative and technical workers were sent from Anshan to other sectors during the first eight months this year. Another 22,000 are slated to go from the giant Anshan works to other jobs.

But the principal steel centers, such as Anshan and Paotow, will bear the brunt in the Chinese battle for steel. A new blast furnace and two large openhearths are under construction at Anshan. At Paotow a small iron and steel works is being built in addition to the large integrated plant now in use. It will include iron and steel smelting plants, and a number of plate mills.

FIRST HEAT: Blast furnace at Wuhan produces first heat of iron.

Challenge Clearance Rule on Civilians

The government's right to require civilians working in defense plants to be cleared as security risks is to be decided by the U. S. Supreme Court.

The court will review a case in which the Pentagon's withdrawal of security clearance led to the dismissal of an $18,000-a-year vice president of an engineering research firm. It will be the first constitutional challenge of the broad government industrial security program before the high court.

Broad Effect—Outcome of the case will affect some 3 million civilian employees of defense contractors.

Defense Department now requires all workers doing secret defense work to be cleared for security and loyalty. Withdrawal is often tantamount to dismissal.

The engineer in the case lost his job in 1953, and has since been unable to get work as an aeronautical engineer. He has lost appeals to lower courts.

Another Issue — The Supreme Court will review the practice of denying clearance to workers on the basis of secret information.

DENISON *Announces...*

a new hydraulic COMPACTING Multipress line in capacities from 2 to 75 tons

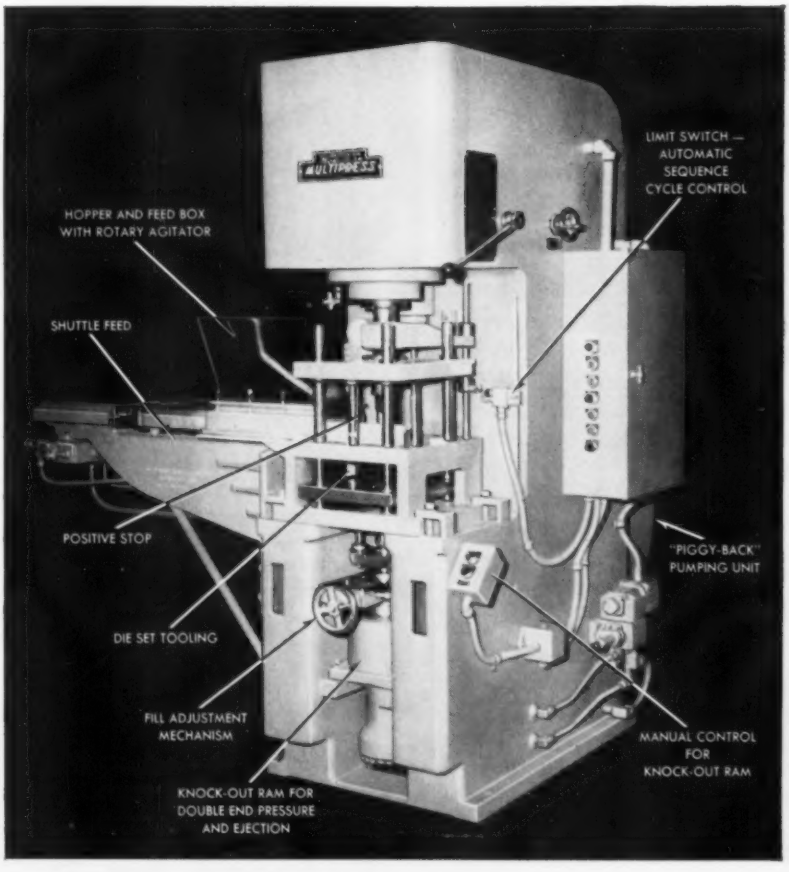
ELIMINATES SCRAP LOSS
Hydraulic ram pressure and speed controls are adjustable *up and down.* Timing prevents fracture of parts (due to vacuum) at time of ejection.

UNIFORM FILL AND DENSITY produce duplicate, uniform quality from part-to-part . . . even for thin, ring-type parts. Production is done to *extremely close tolerances.* Three exclusive features help make this possible: Ram pressure reversal, retractable core pin and two types of feeders available . . . rotary agitator or vibratory grid.

BUILT-IN SAFETY—Adjustable limit-switch settings and positive stop regulation guard the sequence operational cycle of the 3 hydraulic rams. Overloading the die is prevented—resulting in *longer die life* with less breakage.

UNIFORM CROSS-SECTIONAL DENSITY of compacted parts is assured by application of double-end pressure. And, where necessary to improve density, exclusive *Vibratory Ram Action* can also be applied.

ADJUSTABLE FILL FEATURE allows adjustment of the volume capacity of the die even while the press is in operation. Result is fast, simple setup changes—and ability to *compensate for variations in material* (particle size, moisture content, etc.) from batch to batch.



New Hydraulic Compacting Presses . . . from Denison feature exclusive shuttle-feed with rotary agitator for compacting—powdered metal, plastics, "teflon", ceramics, food products, chemicals, pharmaceuticals, carbon, asbestos, ground cork, powdered glass, plastic-impregnated fibrous material, uranium oxide, fertilizer, abrasives. Denison Multipress offers fabricators many unique quality-control, cost-saving production advantages.

Write for full details in Bulletin M-11-B

HYDRAULIC PRESSES
PUMPS • MOTORS • CONTROLS

DENISON HydrOILics

Denison, Denison HydrOILics, and Multipress are registered trademarks of Denison Eng. Div., ABSCO

DENISON ENGINEERING DIVISION
American Brake Shoe Co.
1242 Dublin Road • Columbus 16, Ohio

Denison Stocking Branch Offices:
DETROIT CLEVELAND LOS ANGELES HOUSTON CHICAGO NEWARK ATLANTA

It's 700 Feet Straight Down

RISKY: Workmen perch 700 ft above the Colorado River to string a four-inch coil cable across the Glen Canyon, Ariz. It will be used to haul 50-ton loads of concrete and material to build the Glen Canyon Dam. Cable, said to be the largest and strongest of its kind, was made at Trenton, N. J., plant, American Steel & Wire Div., U. S. Steel Corp.

Area Seniority Vital In Chrysler Pact

One provision of the new Chrysler-United Auto Workers contract provides a practical experiment in solving the problems of workers displaced due to consolidation or relocation of jobs within an area.

One auto industry observer, Prof. Meyer S. Ryder of the Univ. of Michigan School of Business Administration, calls it "the most significant item in this year's Big Three agreements."

And he notes: "The union has been particularly concerned with the problems which arise when high seniority employes at one plant are laid off, while much lower seniority employes are recalled to jobs at another plant of the same company in the area."

Dual Seniority Lists — Under area-wide seniority, two seniority lists will be maintained; one list for each plant and others for each geographic area where Chrysler plants are located.

The plant seniority set up is standard. Employes laid-off in one department can move to another department and "bump" a lower seniority employe, providing he has the "ability" to perform the work.

How Area Seniority Works—The second and key list, is restricted to employes with 12 years or more seniority who have been laid-off for at least 60 days. Formerly, when plants or departments closed, employes were able to carry only their company seniority with them and went into the new plant as a new employe.

As openings occur through normal attrition at plants other than the one from which a worker is laid off, he will be considered for the opening. These openings will be filled half each from the plant and area seniority lists. Thus, all workers on area lists can't "bump" employes with lower seniority in another plant. However, once on the new job, he is placed on the plant seniority list according to his total job seniority.

Extra Requirement—A further provision requires the employes selected from the area list to have "satisfactorily performed" the type of work involved. Plant seniority requires only "ability" to do the work. The plan will go into effect Feb. 2, 1959, and will expire Aug. 31, 1960.

PA's Say Business Is Up But Not Booming

Business is moving up, but not rapidly or evenly, reports the National Assn. of Purchasing Agents.

Their last survey indicates steel and chemicals recovering well. textiles and lumber still in trouble.

Better Output—Total of 54 pct reported increased production, the largest group since early 1955. Only 8 pct reported less output.

New orders had increased in 50 pct of the cases, while 38 pct held their own.

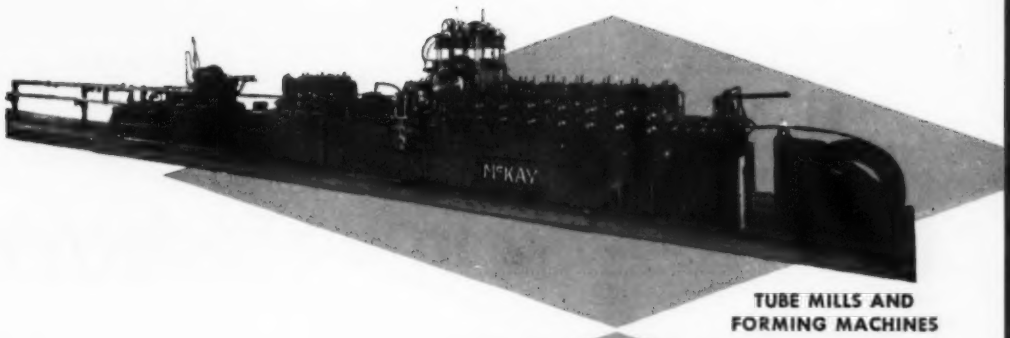
Most NAPA members see no rapid return to capacity operations and full employment. The consensus is a gradual and continuing advance.

Nonferrous Factor—Higher nonferrous prices play the leading role in the report of 54 pct of the members that they are now paying more for commodities they buy.

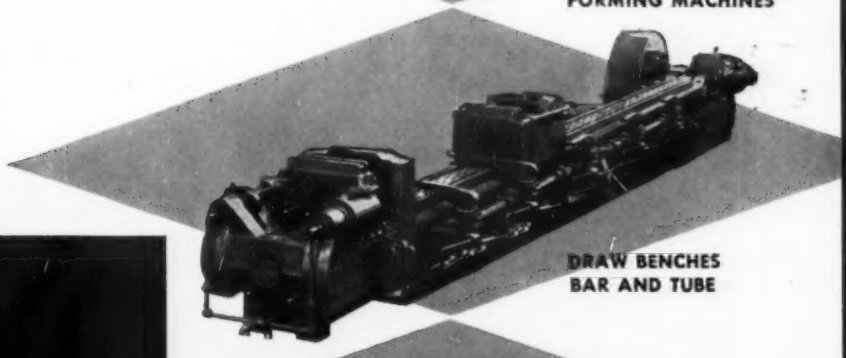
Inventories appear to have leveled off with 50 pct reporting no change, and 31 pct reductions.

Still Losing Money

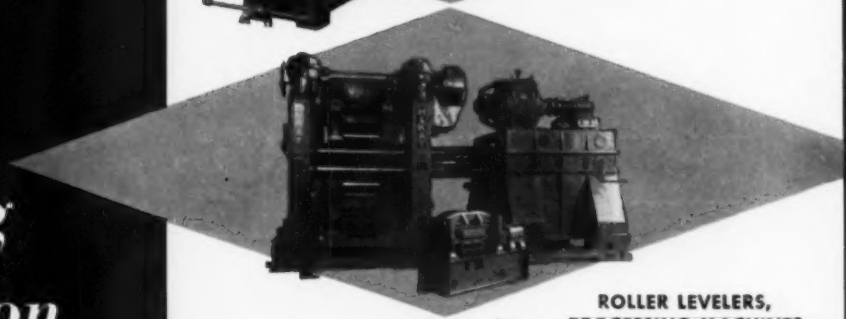
Despite the higher postal rates this year, the Post Office Department is still losing money at a staggering rate. The deficit for this fiscal year (ending next June 30) is expected to be around $350 million dollars, up sharply from earlier estimates.



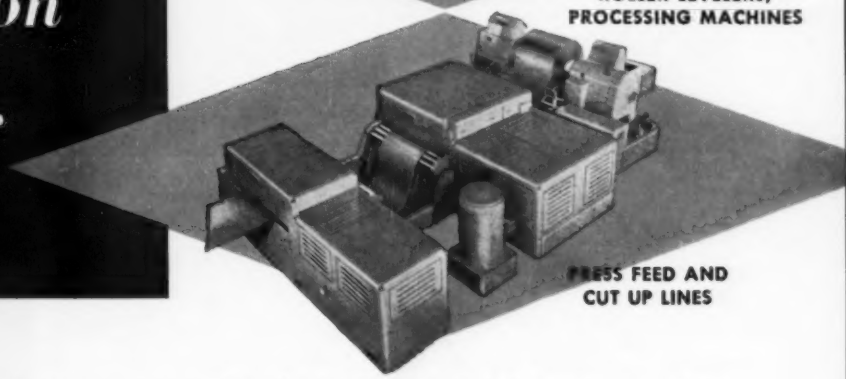
TUBE MILLS AND
FORMING MACHINES



DRAW BENCHES
BAR AND TUBE



ROLLER LEVELERS,
PROCESSING MACHINES



PRESS FEED AND
CUT UP LINES

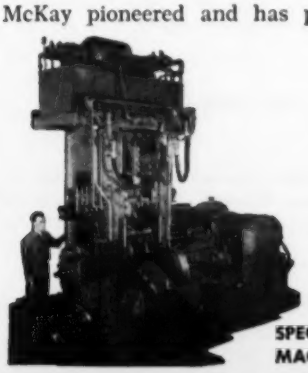
Metal working Automation in action...

If you're in the metal working business, you should be acquainted with McKay *automated* lines available for many metal working operations.

McKay pioneered and has played a leading role in the development of such equipment as that pictured on this page.

Basic McKay designs can be modified, or special machines developed to meet specific requirements.

THE McKAY MACHINE CO., YOUNGSTOWN, OHIO



SPECIAL
MACHINERY

McK

Philip R. Marsilius

Never Too Young to Succeed

Mr. Marsilius is a real-life answer to those who feel there are age limits to success.

His record indicates that, in the final analysis, it's ability and drive that count.

■ How old would you expect a man to be who has accomplished the following?

Executive officer of a leading machine tool firm.

President of the National Tool and Die Manufacturers Assn.

Treasurer and director of the American Society of Tool Engineers.

Former tool and die industry advisor to the Metalworking Equipment Div., National Production Authority.

Holder of the French and Belgian Croix de Guerre.

Your guess is probably wrong. The man who holds these titles is Philip R. Marsilius, 36, executive vice president of Producto Machine Co., Bridgeport, Conn.

P. R. MARSILIUS: An executive must be a triple-threat performer.

Results Count—To many of us who will never see 40 again, young Phil Marsilius' accomplishments can serve as an inspiration and a renewed challenge. There is no such thing as "too young" or "too old" once a man gets into the world of business. It's the ability to get results that counts.

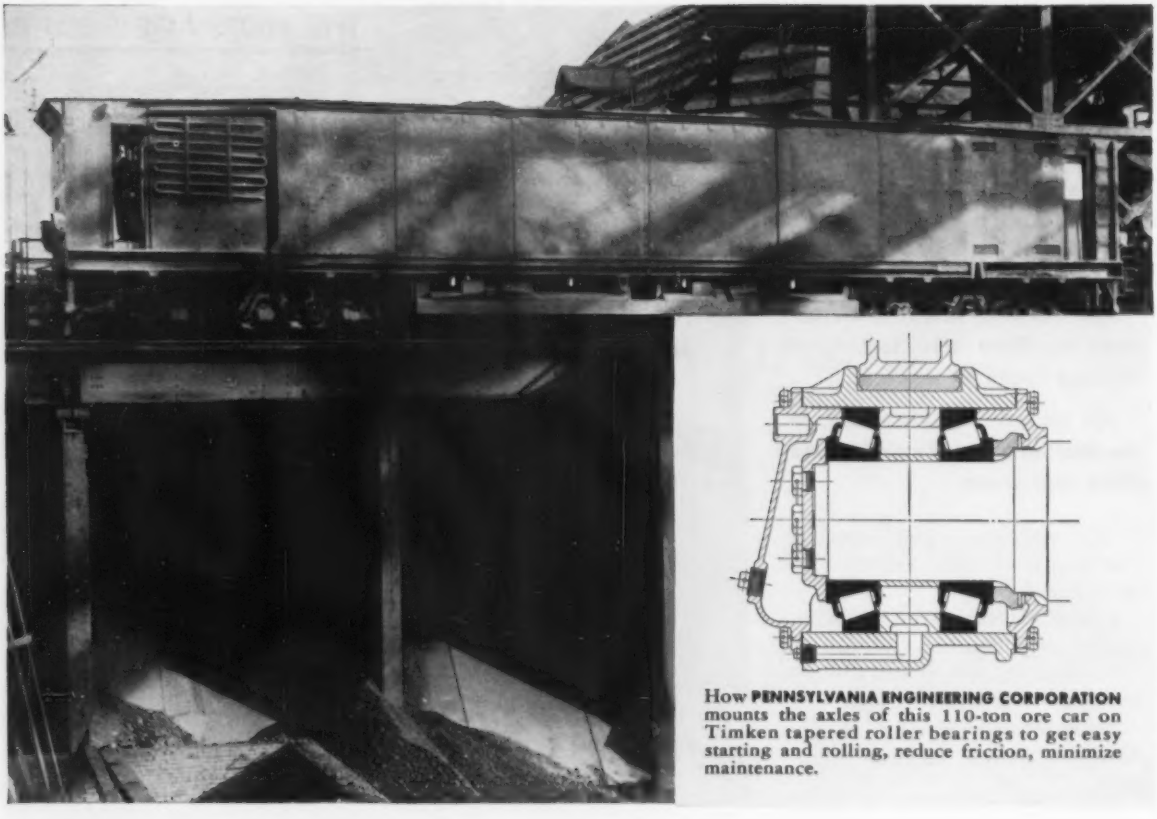
Aside from his official titles, Phil Marsilius is known in the metalworking industry as an outstanding sales executive.

Phil Marsilius believes that the mid-20th Century business man, unlike his ancestors, must be a triple-threat performer. He must be thoroughly grounded in the many facets of his business. He must take an active part in trade associations. He must participate wholeheartedly in civic projects.

He Had Help—In all fairness to the man who has had to start from scratch, Phil Marsilius did get considerable push from his father, the late Newman "Cap" Marsilius, one-time president and board chairman of Producto.

Then again, the woods are full of sons who just couldn't make the grade in Dad's business. Actually, Phil is the younger half of a two-brother team which took over active management of Producto after World War II and expanded manufacturing of special machine tools and die sets. The other half is Newman, 40, president of the firm and a State Senator in the Connecticut Legislature.

Scholar and Soldier—A graduate of Norwich University, young Phil took his master's degree in science at Massachusetts Institute of Technology. During World War II the Army—like the tool and die industry — also felt that Phil Marsilius was a good man to have around. He was a captain (at 23) in the armored cavalry, and received the Purple Heart, Bronze Star, Belgian Croix de Guerre, and unit citation French Croix de Guerre.



How **PENNSYLVANIA ENGINEERING CORPORATION** mounts the axles of this 110-ton ore car on Timken tapered roller bearings to get easy starting and rolling, reduce friction, minimize maintenance.

New 110-ton ore car starts easier, rolls smoother and longer on Timken® bearings

BECAUSE this ore car carries a whopping 110-ton load, it has to be easy to start and keep rolling. It's a natural spot for Timken® tapered roller bearings. And it's no wonder that Pennsylvania Engineering Corporation used them on all 6 axles.

Because Timken bearings *roll* the load, starting resistance is cut up to 88%. There's no metal-to-metal sliding friction. Fully loaded cars start easier, with less power loss.

Geometrically designed and precision-made to roll true, Timken bearings virtually eliminate friction. Cars roll smoothly.

And Timken bearings take the tremendous weight and heavy shock loads. Their rollers and races are case-carburized to have hard, wear-resistant surfaces over tough, shock-resistant cores. Full line contact between rollers and races gives Timken bearings *extra* load-carrying capacity. Their taper lets Timken bearings take both radial and thrust loads in any combination. No costly extra thrust devices are needed. Bearing life is longer, maintenance is minimized.

What's more, by holding housings and shafts concentric, Timken bearings make closures more effective. Dirt and dust stay out. Lubricant stays in.

For all these advantages, specify bearings trade-marked "Timken" for the machines you buy or build. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD

How Far Will Recovery Extend?

Recession psychology is old hat. Question now is how fast and how far the recovery will go.

Key factors to watch are consumer durables and overall new orders of manufacturers.

▪ Business psychology has just about completed its recession cycle.

Emphasis has shifted from gaging the recession to evaluating the recovery, its speed and scope. Business decisions of greatest importance now involve planning for improvement.

How Big—The fact that this is a period of recovery is established. Questions now involve its extent, whether it will be moderate and gradual, or whether it might develop into a first rate boom.

In specific areas of business, consumer durables probably hold the key. In the absence of a probable boom in capital goods, consumer durables will have to pace the recovery, at least as far as metalworking goes.

Looks Sound—The 1956-57 record highs in business were reached in spite of comparatively disappointing years for consumer durables. The tremendous outlays for capital spending then more than compensated for the unexplained lag in spending for cars, refrigerators, farm equipment, etc.

At the moment, the recovery looks sound. Appliances and farm implement sales are good. In spite of tightening credit, new home building has not collapsed and total new construction contracts continue to improve.

Watch New Orders—The auto industry is still a question mark, but the industry is making cautiously optimistic sounds although far from reaching top production rates yet.

But probably the most indicative set of statistics to watch involve new orders and sales, and the relationship of new orders to sales.

Past trends indicate that in a sustained period of business gains, new orders will run ahead of sales, but that when new orders begin to run behind sales, it's time to run for cover.

What Happened in '57—With hindsight, you could have spotted the start of the 1957 recession when new orders began to fall well behind sales several months before actual production began to drop.

Currently, both sales and orders are rapidly improving. But, at least through September, manufacturers new orders have not caught sales. September sales of manufacturers seasonally adjusted, totaled $27.6 billion, up from $26 billion in August. New orders rose to $26.5 billion, up from $26 billion.

Reason for Lag—One reason for the continued lag is that many businesses in September could still live off inventories, and felt little need to place orders in advance.

If you can, apply that analysis to your customers and see if their new orders are lengthening out. When they do, it's time for you to get ready to move fast.

Also, watch your suppliers. Don't be left behind if their new orders are stretching.

Indicators Stay on the Uptrend

Broad Advances — Meanwhile, the rate of business recovery continues to be encouraging. Most significant is that it is moving ahead on a broad front.

Latest Dept. of Commerce figures indicate personal income reached the annual rate of $357.5 billion in September. This is up $1.5 billion from August and $6 billion from September 1957.

More, Longer, Higher—The increase reflects the combination of more employment at longer hours and higher wages. The average factory work week is now back to 40 hours, the rate of a year ago, and up 4 pct from February.

The increase in total wages is more significant in that the actual decline was softened by the high rate of transfer payments, largely unemployment insurance, that eased the impact of the recession on total income. However, the bulk of the increase is traced directly to expanded output.

Metalworking Looks Up — Employment, which reached a low of 50 million (nonagricultural) back in April, is now 50.7 million, but still 1.5 million below a year ago. However, most of the increase is in the durable goods industries, particularly metals, machinery, and transportation equipment.

In production, the better-than-average advances have come in primary metals, electrical machinery, construction materials, rubber, crude petroleum, and textiles. Autos continued to lag through September, but should start having their seasonal impact.

Another good point: Prices have shown little change.

Ford Pilot Plant Hunts Quality

Assembly Defects Are Found Before They Happen

Newest addition to Ford's quality control program is a miniature assembly plant.

About one-fourth of first parts supplied to Ford Div. are found to be defective.—By H. R. Neal.

▪ Ford Motor Co. has one of the largest automobile assembly plants in the huge industrial complex it calls the Rouge. Only a few miles away it also has its newest assembly plant which it believes to be the smallest in the industry.

The plant's short assembly line has no production quotas, and only 47 employes. Maximum production at full capacity is a meager five cars a day. Yet, it has all the facilities to build a full variety of Ford cars or trucks.

To Assure Quality—Technically, it isn't really an assembly plant. It's Ford's new Quality Control Center. Its purpose is to take trial and error out of car and truck production by verifying long in advance that all parts of a new model fit precisely when volume production begins.

Generally, the Center is off-limits to outsiders because it's used to assemble new models months before they go into mass production at regular assembly plants. Ford Div. started assembling 1959 cars at the pilot plant last spring. In future years, the plant will operate as much as a full year ahead of new model production.

Complete Check Made — With the pilot plant as a manufacturing laboratory, Ford learned where the new car's defects might be and where production problems would occur before production cars came off the assembly lines.

Starting when the first parts for the 1959 pilot models were received last spring, Ford technicians first checked each part against engineering blueprints. If the part met specifications, it was used to build a pilot model. If it didn't fit accurately, engineers rechecked the "print" and part. They then met with the supplier who manufactured the part, and decided on a plan to correct the problem.

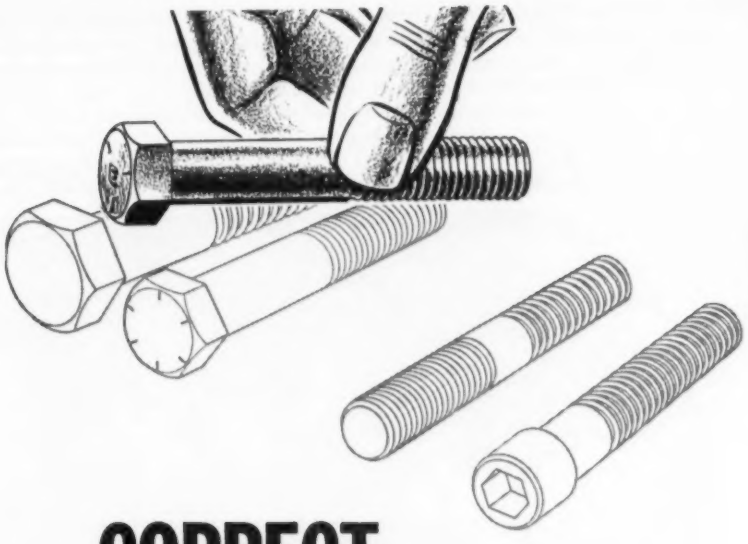
25 Pct Were Wrong—W. A. Folsom, general manufacturing manager, said that 25 pct of the first parts supplied to Ford Div. by its suppliers were rejected for dimensional flaws and other faults. Although many deviations were minor, they were discovered early and corrected before volume production began.

Mr. Folsom pointed out the plant also provides an ideal training ground for branch assembly plant

Competitive Mood Marks Mercury's 20th Year

MONTEREY SEDAN: Mercury claims to be the only car designed exclusively for the medium-priced field. The 1959 Monterey sedan, above, offers as standard a 312 cu in. V-8 engine which operates on regular grade gasoline.

ECONOMIC FACTS ON FASTENERS



CORRECT FASTENER SELECTION AVOIDS COST PENALTY

- **A fastener survey can reveal many opportunities for savings**
- **Cut costs without cutting strength or safety of connection**

It's a mistake to pay premium prices for fastener properties you neither need nor use. While costly alloys have their place, most times the three grades of steel used in standard bolts and nuts can do the job and save money.

Example: Specification calls for alloy bolts with strength of 145,000 psi. But in assembly, they're tightened to just 30,000 psi. This gives no more strength to the joint than a *far more economical* Bright Cap Screw tightened to same load. The change would save a substantial sum.

Reducing size also saves. Remember that a fastener's job is to hold an assembly together. *Holding power* is what you should buy, rather than size or number of pieces.

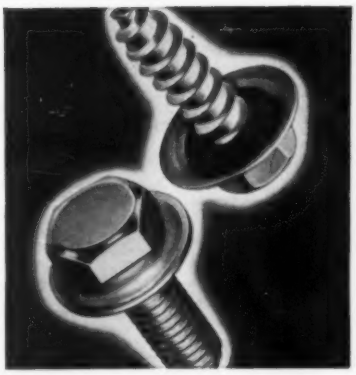
Example: Product requires fasteners with a safe load capacity of 20,000 pounds. Bright cap screws of ¾ inch size will do it; but so will ⅝ inch High Tensile Bolts—*at less cost.* Actually, to get the same holding power as in $1.00 worth of the high tensile fasteners, you would need $1.50 worth of bright cap screws.

All this just touches on a valuable story for any manufacturer using standard fasteners. Worth a call to hear what it holds for *you?* Contact Russell, Burdsall & Ward Bolt and Nut Company.

R B & W

114th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

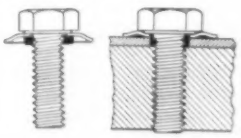


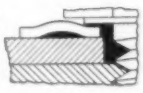
SPIN-SEAL* screws give leakproof fastening

for flat or curved sheet materials

Here is a new type of composite fastener that seals by means of a unique flow-in sealant and washer.

Concave in shape, the heat treated springy washer confines and controls the flow of sealing compound. Tightening the screw forces sealant into various spaces around (1) threads, (2) head, and (3) clearance hole to give hermetic sealing.





When screw is tightened the compound seals clearance hole and top thread; between washer and surface; between head and washer.

The washer has ability to conform to curved surfaces and still seal securely against hydrostatic pressures and wind driven water.

ONLY THE SCREW TURNS

Washer does not turn with the screw. This prevents twisting or tearing the sealing "gasket", marring of polished surfaces, or gouging of painted finishes.

The flow-in gasketing compound is plastic rather than elastic. Stable and non aging, it won't split or ozone-check under pressure. It gives controlled flow into clearance spaces. Compounds are available to seal out water or oil.

Send for Bulletin SS-1A. *T.M.

† U.S. & Can. Pats. Pend.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY

ACHESON

dispersions digest

Reporting uses for

dag® BRAND DISPERSIONS

COLLOIDAL GRAPHITE, MOLY-SULFIDE, VERMICULITE, AND OTHER SOLIDS

WHY 'DAG' DISPERSIONS MEAN *PERFORMANCE* IN ALUMINUM EXTRUDING

The excellent lubricating properties of Acheson Colloidal Graphite, under conditions of extreme heat and pressure have been confirmed by leading extruders of aluminum, steel, copper, brass, lead and other metals. Water-base dispersions of colloidal graphite used in the following application histories have provided savings in material handling, reduced maintenance time and expense, prevented seizure, extended die life, and produced extrusions of more uniformly high quality. Any one of these benefits should make profitable reading for you.

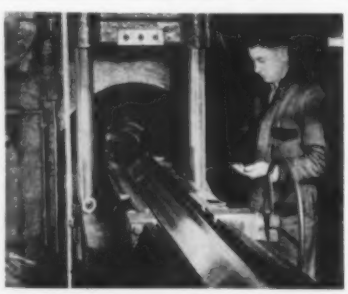
For faster, more uniform application with less material consumption, Aluminum Extrusions, Inc. finds 'Aquadag' their best die lubricant.

A little 'Aquadag' goes a long way for Aluminum Extrusions, Inc., Charlotte, Michigan. This company, one of the leading independent extruders in the country, has found that by applying 'Aquadag' on die surfaces they have effected a 30% savings in their material handling. Formerly, they had used an oil-graphite mixture which required a dilution ratio of 16 lbs. of graphite to a 55 gallon drum of oil. It was too slowly applied by swab and too coarse to apply by spray with any degree of efficiency.

With 'Aquadag', Aluminum Extrusions has a lubricant that is finer in particle size, permits wider coverage, and provides greater "sprayability". These minute particles pass freely through the spray nozzle, eliminating the costly downtime formerly involved in cleaning clogged equipment. The tough, dry film 'Aquadag' forms upon the evaporation of its water carrier, doesn't smoke or react when applied to hot dies and metals. This improves working conditions as well as extends die life. Important also to both die surfaces as well as the finished extrusion, is the fact that this durable, low-friction film allows easier, more uniform metal flow.

Considered in relation to the over 12 million pounds of aluminum extruded yearly at this plant . . . 85% of it in fabricated form . . . *'Aquadag' has brought important production efficiencies and material economy* to Aluminum Extrusions, Inc. In many, similar instances where product quality and basic economy are demanded, Acheson colloidal dispersions have gained ready acceptance.

Exclusive Acheson processing techniques guarantee a consistently uniform top-quality product. If your problem is more effective lubrication under normally adverse conditions of extreme temperature, pressures, or abrasion, call in your Acheson Service Engineer.



Extended die life and extrusions with more perfect surface finish, are attributed to the use of 'Aquadag'.

Dies last three times longer with 'Aquadag', according to another prominent midwest extruder. Metal pickup on the extruding dies has been completely eliminated by the use of this Acheson dispersion, extending the effective use of the dies from 1000 to 3000 strokes. The evaporation of its water-base leaves a dry, adherent "graphoid" film on all lubricated surfaces, inhibiting the build-up of abrasive precipitates. At the same time, the unbroken, microscopically-thin film that 'Aquadag' provides, facilitates metal flow and reduces scoring to a negligible minimum. Application of the lubricant is by spraying a dilution of 1 part 'Aquadag' to 20 parts water, on the die surface before each "push" of the extrusion press.

A 'dag' graphite coating is also applied to the follow blocks on this company's 1400 ton horizontal extrusion presses. For purposes of even greater economy, 'Prodag' — semi-colloidal graphite in water — is used in this application. This effective parting agent prevents the flash, back-extruded from the billet skin, from locking the butt to the follow block. An Acheson dispersion is very possibly the answer to your lubricating troubles. For additional information, write for your free copy of Bulletin 426. Address Dept. IA-118.

ACHESON *Colloids Company*

PORT HURON, MICHIGAN

A division of Acheson Industries, Inc.

Also Acheson Industries (Europe) Ltd. and affiliates, London, England

50TH ANNIVERSARY

Offices in: Boston • Chicago • Cleveland • Dayton • Detroit • Los Angeles • Milwaukee New York • Philadelphia • Pittsburgh • Rochester • St. Louis • Toronto

Automotive Production

WEEK ENDING	CARS	TRUCKS
Nov. 1, 1958	101,252	20,389
Oct. 25, 1958	70,973	16,255
Nov. 2, 1957	126,139	21,226
Oct. 26, 1957	104,987	21,543
TO DATE 1958	3,146,183	680,109
TO DATE 1957	5,035,278	908,797

*Preliminary Source: Ward's Reports

personnel. They receive assembly experience with pilot plant models months before they begin producing the new cars at their home plants. Their experience is carried back with them to alert workers for production changes connected with new models.

Newest Link—The Quality Control Center also conducts special studies of assembly plant processes, packaging, materials handling and shipping.

While the Center is important to Ford's quality program, it's only "another" part. A year ago, the company instituted a "quality audit" program. In this program, teams of "roving" quality control men "drop in" on assembly plants, checking cars at random, where they "inspect" the work of the regular inspectors.

It's obvious from the number of complaints about quality received by all of the automakers each year that their products aren't perfect—but they're trying. And Ford's latest plant is an indication the complaints don't fall on deaf ears.

Mercury Claims Distinction

One of the latest 1959 models to be shown to the public, Mercury has developed a distinctive claim—it's the only medium-priced car designed specifically and exclusively for the medium-priced field. Basis for this claim is the fact all other medium-priced U. S.-built cars share a number of components with makes in a lower price class.

Mercury for 1959 is a big car—bigger than its 1958 counterparts. Wheelbases have been extended 2-in., to 126 in. for Monterey, Montclair and Country Cruiser station wagons, and to 128 in. for Park Lane models. Overall length is nearly 218 in. for the M and M series, over 4-in. longer. Park Lane models are nearly 223 in. long, an increase of about 3-in.

More Room—To further increase front passenger compartment space the instrument panel was moved forward. This provides 6-in. more knee room and 10-in. more distance from the seat back.

Changes have been made in suspension and steering systems to improve ride comfort, stability and handling characteristics. These include anti-dive; wider front and rear treads; wider, longer rear springs; and a shock-absorbing, bind-free flexible steering coupling.

Mercury's out to make the most of the fact it's "alone" in the medium-priced field.

AMC Reports Gains

American Motors Corp. is continuing to rack-up production and sales records. Rambler production in its fiscal year, ended Oct. 1, totaled a record 174,545 units, more than double the total in the previous peak year. Output in the preceding 12 months, formerly the record, totaled 86,468 Ramblers.

Sales during the period reached 154,372 units, surpassing the previous year by 82.2 pct—also a record. In a series of recent upward adjustments, AMC raised its 1959 sales sights from 252,000 Ramblers to 340,000.

Gas Absorbs Shock

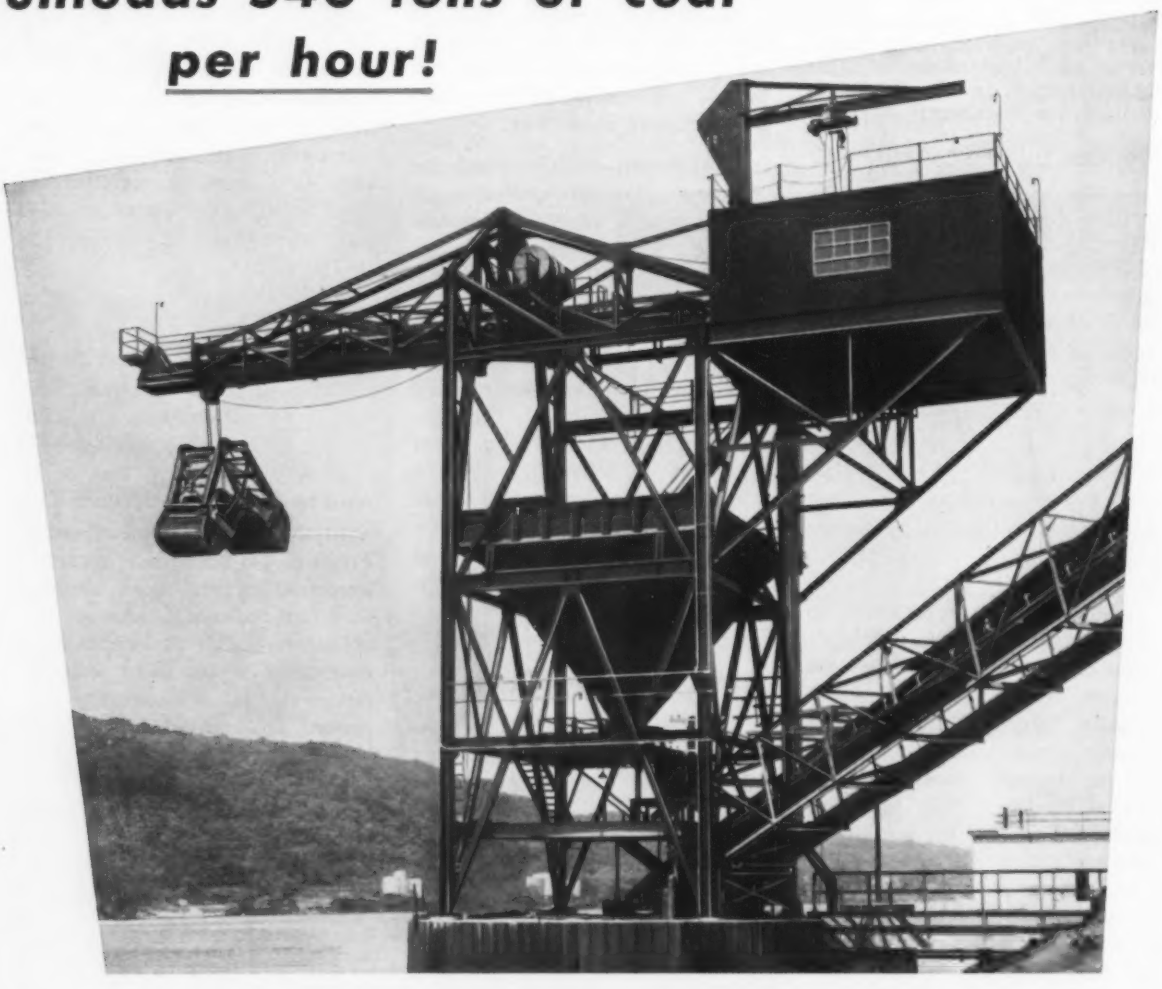
Gas-filled bags in shock absorbers are cushioning road jolts in 1959 Cadillacs. Called Pliacell, the suspension component was developed by GM's Delco Products Div.

In the Pliacell shock absorber, Freon 13 gas sealed in a nylon bag immersed in the shock absorber fluid replaces conventional air reservoirs. As fluid is displaced through movements of the shock absorber piston, the gas is alternately compressed and expanded within the bag. The bag eliminates possible mixing of gas and fluid.

THE BULL OF THE WOODS

BROWNHOIST TOWER

unloads 540 tons of coal per hour!



Designed and built to unload coal from barges to a power plant on the Ohio River, this Industrial Brownhoist stationary tower crane achieves a production rate of 540 tons per hour! Barge hauls move barges to proper location underneath unloader and coal is transferred to 100 ton bin built into the tower and then fed on to a belt conveyor to the plant. All motions are controlled by operator from one position in operator's house which is pressurized with clean air provided by a blower.

The tower, with a 6-ton rope system, is fixed to a concrete cell and is of all-welded construction. Erection joints are fastened with high strength bolts. A pillar crane is fixed to the tower to service electrical and machinery parts in the machinery house.

Industrial Brownhoist designs and builds specialized equipment like this tower in any tonnage and capacity for handling any material at sea ports, steel mills, ore and coal docks and railroad yards throughout the world. For more information on reliable high speed, high capacity material handling equipment, write for catalog 562.

209

BROWNHOIST

CLAMSHELL BUCKET

250 TON WRECKING CRANE

COAL-ORE BRIDGE

CAR DUMPER

LOCOMOTIVE CRANE

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: Cleveland, Philadelphia, Chicago, San Francisco, Montreal.

• **AGENCIES:** Detroit, Birmingham, Houston

You Can Mix Business and Politics

Be Sure You Know All of the Ground Rules

This was the first year that some businessmen hitched up their courage and spoke their political minds.

Results were good. For the wary, here are some do's and don'ts.—By G. H. Baker.

■ This is the year of management's bold stride into the political arena. Some good has been accomplished. Much remains to be achieved.

After 25 years of allowing union leaders to do all the political vocalizing, a sizable number of management men hitched up their political courage this year and spoke their minds. But many executives did not speak up. The reasons: Fear of running afoul of federal laws, fear of the possible loss of their tax-exempt status (in the case of some trade associations), or of public criticism.

The Facts—For those businessmen fearful of violating laws or of losing their tax-exempt status here are the facts:

The Federal Corrupt Practices Act bars corporations and unions from giving funds toward election of a U. S. senator or representative. The U. S. Supreme Court has ruled that this applies only to money.

The court holds that corporations and unions are entirely free to speak or publish advice to their members, stockholders, or customers on the dangers or the advantages in any plans before the Congress, or in the election of men espousing such measures.

Ideas, Not Money — In other words, your firm may not give money, but may broadcast or publish what it thinks about candidates and issues.

As for losing tax-exempt status, the rule is to stick to the main purpose for which the association is founded—furthering the common business interests of the industry.

Lobbying Legal — The Internal Revenue Service has held that associations may properly engage in legislative activities (lobbying) to promote the common business interests of the association.

There are no specific IRS regulations on the subject. If and when the IRS issues rules, it is important to note they will apply equally to all tax-exempt organizations—the largest of which are labor unions.

In Case of An Emergency

The White House has reaffirmed its intention of clamping price controls and issuing rationing orders any time it believes an "emergency" exists.

These points were spelled out in a recent master plan for the nonmilitary defense of the nation issued by the Office of Civilian and Defense Mobilization.

Ready to Act—OCDM is thus putting the nation's manufacturers on notice that it does not intend to wait on the Congress. The planners figure that in case of national emergency they're better advised to act first and worry about the legality of what they've done later.

Some businessmen are concerned over what constitutes a "national emergency." OCDM won't necessarily wait until the bombs drop. A politician's idea of an "emergency" may be quite different from management's. In other words, we may get price controls and rationing without actually being at war.

Rules for Business in Politics

Congress, the U. S. Supreme Court, and some government agencies have spoken on what companies may or may not do in the political arena. The following rules of thumb are based on legal rulings:

A Company May:

Advise employees and stockholders on bills before Congress.

Advise employees and stockholders on the philosophy or attitude of congressmen on important issues.

Urge employees to register and vote.

Urge other businessmen to get interested in politics.

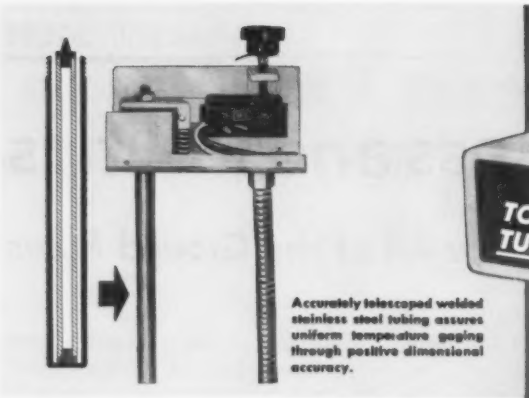
A Company May Not:

Give money to a candidate or political party.

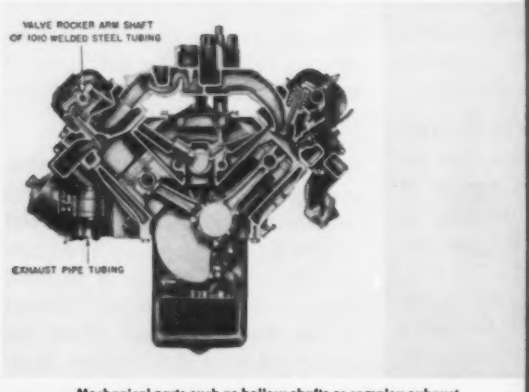
Prepare campaign material or otherwise aid a candidate.

Pay for space in a publication or on the air for a candidate.

(This point is debatable. Walter Reuther did it and won in court.)

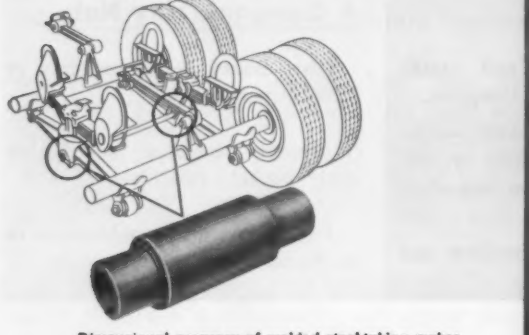


Accurately telescoped welded stainless steel tubing assures uniform temperature gaging through positive dimensional accuracy.



Mechanical parts such as hollow shafts or complex exhaust systems are served equally well by *welded* steel tubing.

Structural, hydraulic and mechanical applications for welded steel tubing show clearly in this roadbuilding equipment.



Dimensional accuracy of welded steel tubing makes this bushing economical, eliminates machining.

WHERE MECHANICAL EFFICIENCY MUST BE SERVED

Use WELDED TUBING

Carbon • Alloy • Stainless Steel

Only *welded* tubing combines the advantages of a tube's hollow form and structural strength with exceptional mechanical efficiency resulting from uniform wall thickness, concentricity, accurate dimensions and general adaptability to fabrication of all kinds.

Welded tubing is available from your quality tube producers in all weldable grades of steel in a full range of sizes.

It's time to design with *welded* tubing in mind!

FORMED STEEL TUBE INSTITUTE

Specific information on welded tubing is available on request to:

FORMED STEEL TUBE INSTITUTE

850 HANNA BUILDING • CLEVELAND, OHIO

An Association of Quality Tube Producers

LC-583

Farwest Steel Consumption by Users

Products	Manufacturers	Fabricators	Service Centers
Plates	597,000	520,000	216,000
Struct. Shapes	106,000	384,000	212,000
Hot-rolled Bars and Bar Shapes	310,000	520,000	255,000
Sheet and Strip	739,000	131,000	274,000
Standard and Linepipe	246,000	23,000	234,000
Other Products	1,716,000	58,000	379,000
Total	3,714,000	1,636,000	1,570,000

Source: Kaiser Steel Corp.

Coast Steel Use Will Grow in '59

Steel users in the Farwest will purchase about 6 million tons this year.

But next year they may use 6.6 million tons, just under record steel consumption of 1957. —By R. R. Kay.

▪ West Coast steel buying will head upward again next year.

Customers in the seven Farwestern states will buy about 6.6 million net tons. That's only 200,000 tons under the record in 1957.

For this year it looks as though the region will use close to 6 million tons of steel.

More for Building — Construction will play a big part in the 1959 uptrend. Roughly half of the steel shipped to Farwest customers goes to that industry.

Engineering and light construction are humming at record levels. An even quicker pace seems like a good bet for next year.

Big jobs are in the works on military establishments, highways, and bridges. They should easily offset the reduced industrial building.

Busy Markets—Look for these industries to do well in 1959: Shipbuilding, appliances, air conditioning, ordnance, machinery, automotive components, and fabricated pipe for big water projects.

That's the outlook of the market experts at Kaiser Steel Corp. in the firm's annual survey, "Report to Farwestern Steel Purchasers." You can get a copy from the General Planning Division, 1924 Broadway, Oakland 12, Calif.

Why 1958 Lagged — Steel users in the Farwest, as elsewhere, bought less this year. Even so, the Western market will be 10 pct above the 1954 recession level. Consumers dug deeply into inventories and leaned heavily on the mills for fast delivery.

Buying Trends—From now on you can expect Farwestern users to keep inventories slimmed down. Why? The big mills have upped capacity a great deal. Also they're giving even better delivery and service. Mill customers are sure to take advantage of this. They'll tend to keep stocks pretty close to what they need.

Who Buys and Where — Who are the big buyers? Steel fabricators and steel service centers run neck-and-neck. (See table.) Each takes just under 25 pct of all Farwestern mill products. The service centers are good, longtime customers of the mills. Year after year Western distributors buy about 5 pct more than the national average.

There's not much change in where the products go. Southern California is still No. 1 buying area. It takes 41 pct. And 31 pct goes to Northern California; 16 pct to Washington and Oregon; 12 pct to Arizona, Nevada, Utah and Idaho.

Shipping Pattern—Southern California took 2 pct less steel, mainly less sheet and tinplate, during 1957.

In contrast Arizona, Nevada, Utah, and Idaho enlarged their share in the market by 2 pct. Those areas bought more structurals, sheared plate, and pipe.

QUALITY CONTROL CAN BEGIN AT THE POINT-OF-OPERATION WHEN YOU FEED PARTS WITH BELLOWS WORK FEEDERS

You will have many more acceptable parts at Final Inspection if you examine work pieces at the point-of-operation. To give machine operators time for visual inspection, feed parts to tools with Bellows Work Feeders. The operator will then have time to load at one station, unload and examine a finished part while his machine continues to work. Not only will there be time for examination of the machined part but you will be able to use more of the machine's producing ability. The tool won't be standing idle while the operator loads and unloads.

Bellows Work Feeders are made in both rotary and linear type models; different units designed for high speed parts positioning where tolerances are not critical, or precision indexing types where close accuracy is required.

Air-Powered, electrically controlled, they are easily installed on standard machine tools, can be readily synchronized to work with the basic machine cycle.

To cut machining costs . . . keep the machine working while you load or unload a fixture.

These Bulletins give you the Facts

Write for Bulletins RT 1022 and RT 1326 for full specifications and application data on Bellows Work Feeders. Address Dept. IA 1158, The Bellows Co., Akron 9, Ohio. In Canada, Bellows Pneumatic Devices of Canada, Ltd., Toronto 18, Ontario.

The Bellows Co.

DIVISION INTERNATIONAL BASIC ECONOMY CORPORATION

AKRON 9, OHIO

1030-B

Domestic Tool Sales Inch Up

Direction, Not the Total, Spurs Some Optimism

NMBTA figures September domestic bookings at a flat $20 million, up from August.

Export orders continue to disappoint as bookings slump.

Dark clouds still mar the export future, but some builders take steps to blow them away. —By E. J. Egan, Jr.

▪ Machine tool builders booked a little more business with domestic customers in September than in either July or August.

It wasn't enough of an improvement to spur any real optimism in the industry. But, as one builder put it, "At least the trend is in the right direction."

Export Off—Orders for export continued to be a disappointment. The downtrend in metal cutting machines continued. And orders for metal forming tools, which had shown no particular pattern, were off.

The National Machine Tool Builders' Assn. estimates September's net new order total for metal cutting and metal forming machines combined at $20 million.

Previous totals: August—$19.3 million; July—$20.9 million; September, 1957—$36.8 million.

Downhill—NMBTA figures show that foreign orders for metal cutting machines in September totalled only $1.8 million. This is the lowest monthly total since the group began clocking foreign orders and shipments in September 1945. The high was in December, 1950 — $32.9 million. It's been downhill since.

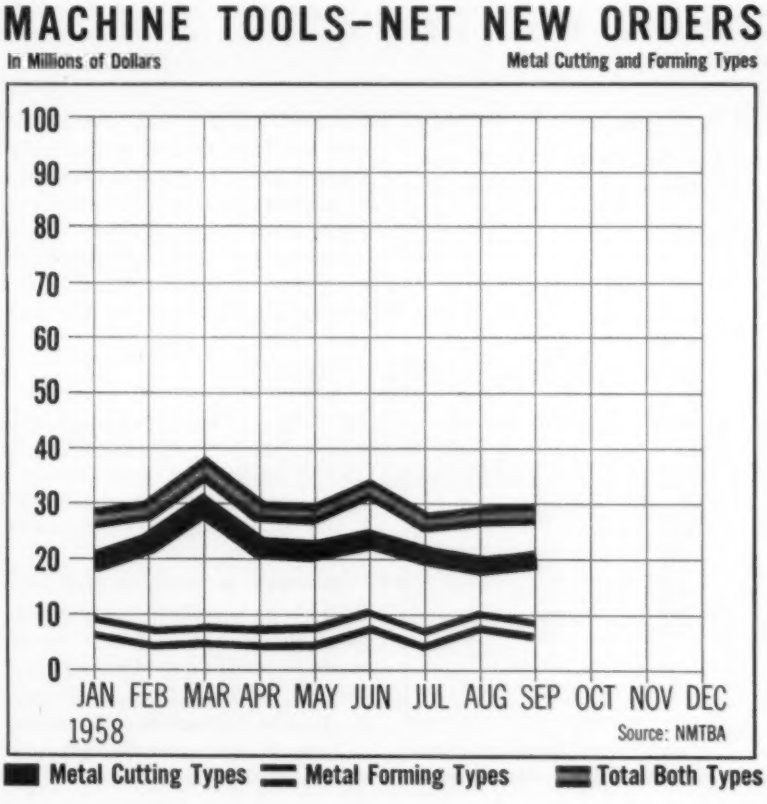
It's difficult to draw a conclusion from the estimated $1.8 million in foreign orders for metal forming machines. They've been both higher —June, 1958 was $3.3 million; and lower—February, 1958 only $300,000.

Regardless of machine type, the overall export picture for most U. S. builders looks dark. European builders—including the Soviet bloc —are giving the Americans a run for their money, in Europe and every major export area.

Price is Key—In a growing number of cases, moreover, free Europe's builders are walking off with orders in the U. S. itself. How do they do it? There's only one answer—lower prices.

So American builders find themselves in a multi-front fight, abroad and at home. It's one they're going to have to go alone. The Government doesn't want to get in the act. Washington might encourage a few trade missions to foreign lands; two builders are represented on a team going to India this month. But as for boosting import tariffs, no dice.

Strategy — Some builders think they can eventually win these battles. These are the ones who are setting up foreign plants or licensing agreements with overseas manufacturers. At home, they're bearing down on research and development programs harder than ever.



INDUSTRIAL BRIEFS

Wrapping Service — Reynolds Metals Co., Richmond, Va. is opening new facilities to serve the $14 billion packaging industry. Facilities include a building to house the company's styling and design services, a machinery development center, and a pilot research plant for developing packages.

Post of Trust—Walter K. Bailey, president, The Warner & Swasey Co., has been named a member of the Case Institute of Technology Board of Trustees.

Let There Be Light—The R. C. Mahon Co., Detroit, has a $500,000 steel contract from Indianapolis Power & Light Co., Indianapolis, Ind. It calls for the fabrication and delivery of over 1600 tons of structural steel, for the erection of unit No. 6 of the power firm's Harding Street generator station.

Low Man In—The U. S. Bureau of Public Roads has accepted Pittsburgh-Des Moines Steel Co's. low bid on constructing the east and west approach superstructures of the Woodrow Wilson Memorial Bridge. It will be a key link in the Washington, D. C. Circumferential Highway, crossing the Potomac from Alexandria, Va. to Maryland.

"Do any special directions come with this particular rachet wrench?"

Ford Funds First—A $6.2 million Ford Foundation grant has been given Brookings Institution for establishment of a Center for Advanced Study and Research in Washington. The grant is the first major contribution in support of Brookings' new $13 million expansion program which contemplates the establishment of a national center for the study of public problems.

Busy Phoenix—Phoenix Bridge Co., subsidiary of Barium Steel Corp., has a contract for about $3 million to fabricate and erect the Wayne Junction Bridge on the Roosevelt Blvd. extension in Philadelphia. Seven thousand tons of steel will be required for the 2600 ft long viaduct carrying the dual highway over tracks of the Reading and Baltimore & Ohio Railroads.

Onward and Upward—The Carborundum Co. has launched a $1 million expansion and modernization program at its Refractories Div. plant in Keasbey, N. J. Program calls for erecting new buildings, realigning production facilities and installing new equipment.

Nuclear Precision—A new division producing complex precision metal parts for the nuclear industries has been formed by Standard Pressed Steel Co. The new Nuclear Components Div., at the company's Jenkintown, Pa., headquarters plant, is an outgrowth of the Precision Stud Div., set up in 1957 to make special threaded parts for the power-producing industry.

Systematic Producer — Hughes Aircraft Co., Culver City, Calif. has a U. S. Air Force contract for $16.2 million for production of aircraft and weapons control systems for the F-106 all-weather jet interceptor.

Doorways to Sales — Midland-Ross Corp., Cleveland, has acquired for more than $600,000 a new product line from Consolidated Metals Products Corp., Albany, N. Y. The line consists of electrically and pneumatically actuated door operating mechanisms.

Ore Dock Facelift — Jones & Laughlin Steel Corp., has started the rehabilitation of its Cleveland Works ore dock on the Cuyahoga River. Approximately 400 feet of the north section of the dock will be improved at a cost of $533,000. Another 178-ft section of the dock was modernized in 1950.

More Vacuum Melting—Latrobe Steel Co., Latrobe, Pa., has announced the start of a major expansion in its vacuum melting operations for the production of super alloy steels. A new consumable electrode vacuum melting furnace has been ordered from the Lectromelt Furnace Div., McGraw-Edison Co., to add to its present facilities.

Sheet for Sale—Aluminum alloy 5083, a non-heat-treatable aluminum alloy, is now available in sheet form from Kaiser Aluminum & Chemical Sales, Inc. Formerly available only in plate form, 5083 is a weldable magnesium-manganese alloy developed by Kaiser Aluminum.

Alloy Area—Rolled Alloys, Inc., distributor of heat resisting alloy steels, has purchased a large area of the former Packard properties in Detroit for a new plant. Executive offices of the company will be at 5309 Concord, adjoining the warehouse.

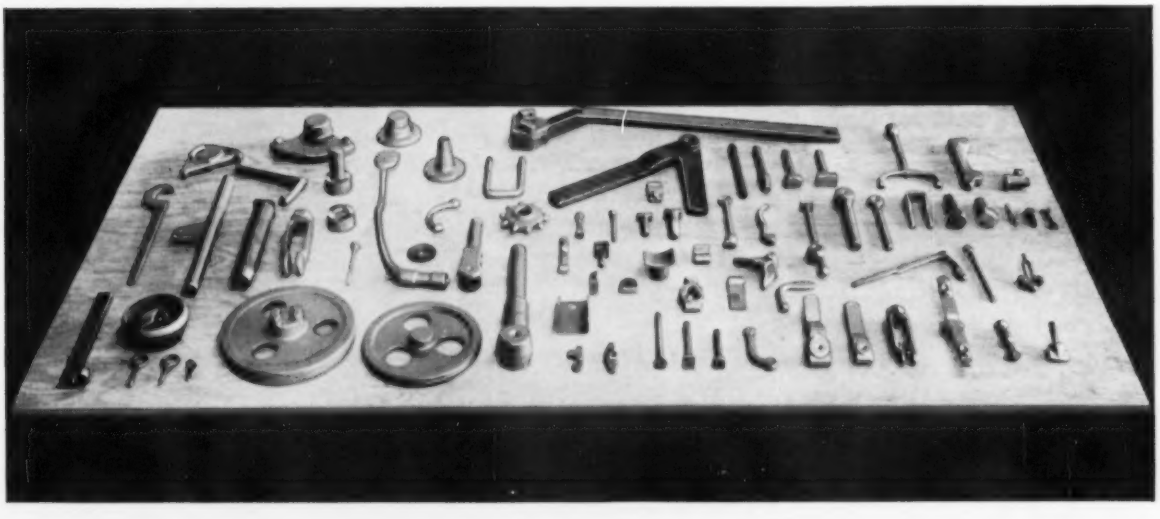
Added Assets—Pioneer Engineering & Mfg. Co., Inc. has acquired all of the assets of Wettlaufer Engineering Corp. Pioneer will reorganize Wettlaufer into an operating division. Both firms are in Detroit.

Triple Play—Dravo Corp., Pittsburgh, has been awarded a contract for the design and supply of five lubrication systems to be installed on a new 10-in. rod mill to be erected at the Sheffield Div. of Armco Steel at Kansas City, Mo. The contract was awarded by Rust Engineering Co., Pittsburgh. The mill which has been designed and built by Morgan Construction Co., Worcester, Mass., will be erected by Rust.

200 Different Parts Heated for Forging-

Better, Faster and at Much Lower Cost

with TOCCO Induction Heating*



• When progressive production people at General Railway Signal Company installed a 200 kw, 3000 cycle TOCCO machine, they were able to eliminate 7 slot-type oil-fired furnaces and produce better forging than ever before—at substantially lower costs.

Cost Down—Fuel costs have been reduced from $15.26 to $1.60 per hour with TOCCO. Expensive furnace lining maintenance has been eliminated, and straightening and reheating operations formerly required are no longer necessary.

With oil-fired furnaces all steam hammer operators needed helpers. With TOCCO most of these helper operations have been eliminated.

TOCCO's fast, automatic operation produces almost no scale and achieves uniform temperatures throughout the entire cross section—improving the quality of the forgings and providing increases of up to 400% in the life of the forging dies.

Overall production costs in the forge shop at G.R.S. have been reduced an impressive 35%!

Flexibility—Production runs at G.R.S. range from a low of 15 pieces to a high of over 50,000. Parts from ½ pound to over 25 pounds are heated, merely by changing inductor coils and power control settings.

Better Working Conditions—TOCCO makes the forge shop a better place to work by doing away with noise, dust, dirt, smoke and radiant heat and gases produced by old fashioned furnaces.

If you're looking for a way to produce similar results in your plant, it will pay you to consult a TOCCO Engineer.

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The Ohio Crankshaft Co. • Dept. A-11, Cleveland 5, Ohio

Please send copy of "Typical Results of TOCCO Induction Heating for Forming and Forging".

Name_____

Position_____

Company_____

Address_____

City_____ Zone____ State_____

D. R. Spotz, promoted to president and general manager, Pesco Products Div. and Wooster Div., Borg-Warner Corp., Bedford, O.

W. S. Mahoney, elected president, Ramsey Corp., a wholly-owned subsidiary of Thompson Products, Inc.

G. R. Sylvester, elected president, Continental Coatings Corp., Cleveland.

Following appointments are within Chrysler Corp.'s automotive sales group. **A. B. Nielsen,** appointed executive assistant to group vice president, sales; **W. J. Bird,** appointed asst. general sales manager, general sales office.

M. F. Carter, named vice president, Worcester Pressed Steel Co., Worcester, Mass.

N. F. Garrett, elected vice president and general manager, manufacturing, Crane Co., Chicago.

Barclay Morrison, named assistant marketing manager, The Carpenter Steel Co.'s Alloy Tube Div., Union, N. J.

F. H. Kirkpatrick, named assistant to the co-ordinator, Production Control, Allegheny Ludlum Steel Corp., Pittsburgh.

G. E. Rockwell, named director, sales training, Delta Power Tool Div., Rockwell Mfg. Co.

L. J. Prior, appointed traffic manager, Machinery Div., and **W. T. Hoffman,** traffic manager, Tubular Div., The National Supply Co.

D. C. Leith, appointed general sales manager, Price Electric Corp., Frederick, Md.

W. J. Ohrenberger, appointed sales manager, J. C. Corrigan Co., Inc., Boston.

E. F. Coll, appointed Detroit district sales manager, M-E-L Div., Ford Motor Co., Dearborn, Mich.

D. W. Boyles, appointed assistant purchasing agent, Northwest Div., The National Supply Co., Casper, Wyoming headquarters.

Dr. E. A. Horiak, named director, engineering, Hercules Motors Corp., Canton, O.

Robert Lawrence, Jr., appointed sales manager, Metallurgical and Process Industries, The M. W. Kellogg Co., New York, a subsidiary of Pullman Inc.

G. C. Elmberger, appointed director, industrial engineering, National Can Corp.

Stanley Schneider, appointed manager, engineering, Helipot Div., Beckman Instruments, Inc.

Dr. A. R. Gray, appointed director, research, Holland Color & Chemical, subsidiary of Chemetron Corp., Chicago.

Howard Freyensee, appointed manager, sales, large excavators, Bucyrus-Erie Co., South Milwaukee, Wis.

E. A. Vierow, appointed assistant to the manager, Youngstown Dis-

F. P. Blonska, appointed sales manager, central states, The Cleveland Cap Screw Co., Cleveland.

Big Paul digs and dumps 105 tons in 50 seconds!

USS "T-1" and TRI-TEN Steels cut dead weight—boost strength

Even from a 100-foot-high perch, the mammoth size of the bucket of Big Paul, the King of Spades, is hard to comprehend.

There are three of these 70-yard giants—all built by Marion Power Shovel Company. All achieve strength and toughness with least weight by the use of USS "T-1" Constructional Alloy Steel and USS TRI-TEN High-Strength Low-Alloy Steel.

Big Paul sets the pace at the Peabody Coal Company's River King mine near Freeburg, Illinois. It rams through rock and shale to uncover some two million tons of coal per year.

Since 1950, the art of big shovel making has increased dipper size from 35 to 45, 55, 60, and now 70 cubic yards per bite. Most of the buckets and dipper sticks of these giant shovels are made of USS "T-1" Steel, for otherwise, it would be almost impossible to make them light enough and tough enough. They hold up in this service, taking terrific impact abrasion and shock loading, even in the dead of winter. This is possible because USS "T-1" Steel retains its toughness at temperatures far below zero.

Dipper Size Increased 25%

USS "T-1" Steel has often enabled a boost in the capacity of original equipment without increasing weight. For example, a 20-yard bucket was replaced with a 24-yard "T-1" Steel job. Other dippers were boosted from 26 yards to 32, and 36 yards to 45—increases of 25%.

Many other parts—dipper stick, bail handles and crowd rack—are built stronger and lighter with this 90,000 psi minimum yield strength constructional alloy steel. (USS "T-1" Steel plates up to 2½ inches thick inclusive are *now* available with a minimum yield strength of 100,000 psi.)

The booms and A-frames of most shovels over 45 yards are designed with high-strength low-alloy steels with 50,000 minimum yield point . . . usually USS TRI-TEN Steel.

Perhaps you need a steel that offers higher yield strength, extraordinary toughness and resistance to impact abrasion, combined with relative ease of fabrication. USS "T-1" Steel is your answer, and we'll gladly help you adapt it to your application. For free booklet, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS, "T-1" and TRI-TEN are registered trademarks

◀ 70-yard dipper and handle, crowd rack, bail and sheave blocks—all built stronger and lighter with USS "T-1" Steel.

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

United States Steel

12 tons of forged steel for Yankee fission

The picture shows a steam generator tube sheet forging (one of four) destined for a 134,000-KW nuclear-fueled power plant owned by the Yankee Atomic Electric Company, in Rowe, Massachusetts.

It's a $50-million plant that uses a pressurized water reactor. The USS Quality Forging tube sheet is 85" in diameter by 26 7/16" thick. Some 1600 holes will be drilled through the forging longitudinally, and in these holes will be placed stainless steel tubes which will carry high pressure, high temperature main coolant water.

The forged tube sheet is made from carbon steel with a pinch (.057%) of vanadium in it. Starting from the raw ingot, it was heated, forged, rough machined, normalized, tempered, rough machined again, then quenched and tempered. It received a great variety of tests along the way—including several ultrasonic tests. The forging, as shipped, weighed 25,500 pounds.

Nuclear power plant designers have known from the beginning that it is extremely important to use highest quality components. That's the reason why they come so often to United States Steel for its justly famous USS Quality Forgings. And although the one shown here is not complicated, the Forgings Division of USS Homestead District Works has produced a great many complex forgings in everything from carbon to stainless steel, including discs, tapered domes, flanges and cylinders of all types.

No matter what kind of a forging you need, isn't it a good feeling to know that the men who will make it have a solid background of experience? We'd appreciate your inquiries or requests for our free folder on USS Nuclear Forgings. Just write United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS is a registered trademark

USS

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Export Company

United States Steel

To date, monolithic flat arch cover (refractory concrete made with LUMNITE calcium-aluminate cement) has provided 4 years' maintenance-free service in pit-type gas annealing furnace. Service Foundry Division, Avondale Marine Ways, Inc., New Orleans.

"...installation time cut in half...no maintenance...less heat loss,"

says Carl W. Goodgion, Chief Metallurgist, Service Foundry Division, Avondale Marine Ways, Inc.

- Refractory concrete (made with LUMNITE cement) resists extreme variations in temperature and repeated thermal shock — gives longer service life to furnace parts and linings.
- Installation is fast, easy, economical — concrete reaches service strength in 24 hours.

For maximum convenience, use castables made with LUMNITE cement. These are packaged mixtures, ready for use. Simply add water, mix and place. Made and distributed by leading manufacturers of refractories.

For literature on refractory concrete, write: L-170
Universal Atlas, 100 Park Avenue, New York 17, N. Y.

UNIVERSAL ATLAS CEMENTS

* **ATLAS** and **LUMNITE** *are registered trade-marks.*

Universal Atlas Cement
Division of United States Steel

USS
TRADE MARK

OFFICES: *Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee · Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco*

trict, The Youngstown Sheet & Tube Co., Youngstown, O.

H. H. Deputy, named product manager, Laminated Div., Cromwell Paper Co., Chicago.

W. F. Johnson, named director, sales engineering, Consolidated Electrodynamics Corp., Pasadena, Calif.

E. M. Barden, appointed special Detroit sales engineer, The Electric Auto-Lite Co., Toledo, O.

G. D. Nicholson, appointed sales representative, Cement-Coke Div., Diamond Alkali Co., Cleveland.

W. A. Black, appointed asst. director, research, Republic Steel Corp., Cleveland.

H. I. McKeever, appointed manager, purchases, Union Switch & Signal, Div. of Westinghouse Air Brake Co.

C. F. Merrigan, appointed manager, scatter and special systems

engineering, Technical Products Dept., Syracuse, N. Y., General Electric Co.

R. T. Rosander, named manager, sales engineering, Chromalloy Corp., White Plains, N. Y.; **D. E. Lehane,** named director, customer relations.

D. W. Bonnar, appointed sales manager, Torc-Pac Presses, Clearing Machine Corp., Div. of U. S. Industries, Inc.

A. M. Willer, appointed sales manager, West Instrument Corp., Chicago.

W. T. McCoy, Jr., named industrial sales manager, R. C. Mahon Co.

S. E. Casson, appointed director, sales, The National Acme Co., Cleveland.

J. A. Mahoney, Jr., appointed sales engineer, Pangborn Corp., Hagerstown, Md.

R. P. Dodds, appointed sales engineer, Aero Hydraulics Div. Vickers Inc., Div. of Sperry Rand Corp.

Dick Groat, named to the Sales Dept. of Jessop Steel Co. of Washington, Pa.

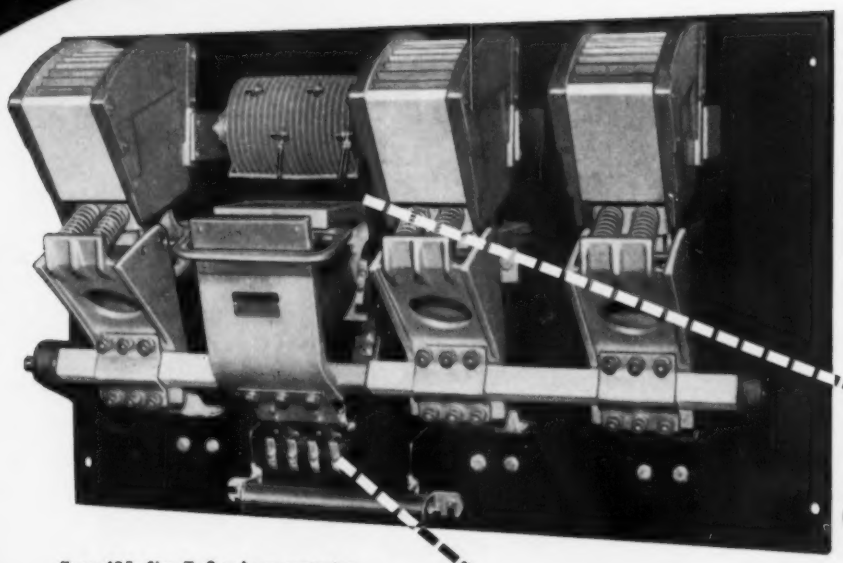
W. R. Seigle, named manager, manufacturing engineering, Westover, N. Y., plant, General Electric Co.

J. R. McRoberts, named director, sales and marketing, Omaha Machinery Corp., San Diego, Calif.

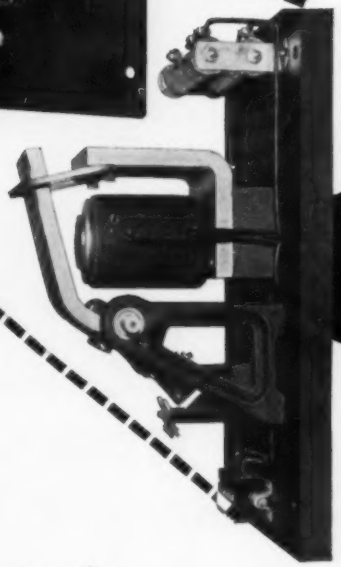
R. E. McGinnis, named vice president, sales, Gregory Industries, Inc., Lorain, O.

W. M. Northey, appointed general superintendent, Gulf States Tube Corp., Rosenberg, Texas, a wholly owned subsidiary of Michigan Seamless Tube Co., South Lyon, Mich.

W. J. Bloudek, appointed sales manager and Anders Anderson, as



Type 425, Size 7, 3-pole ac contactor with self-contained ac to dc economized control circuit.



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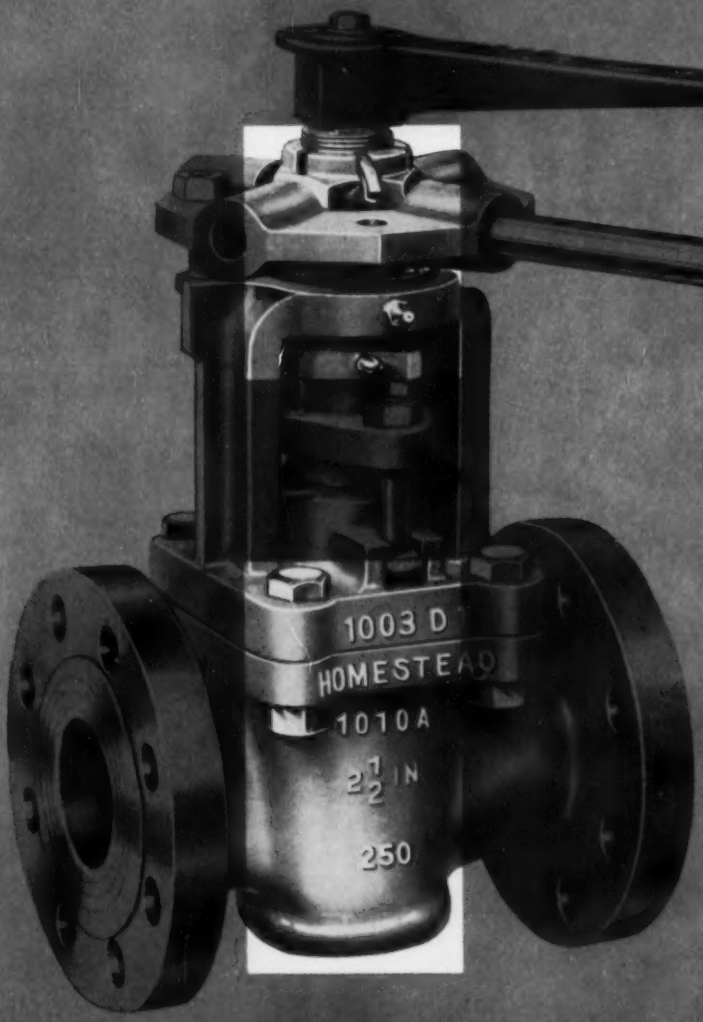
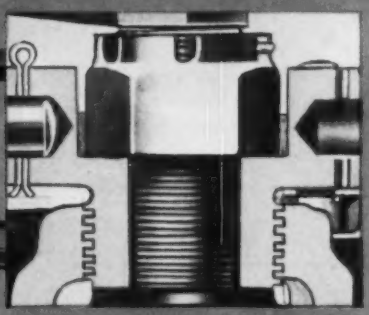
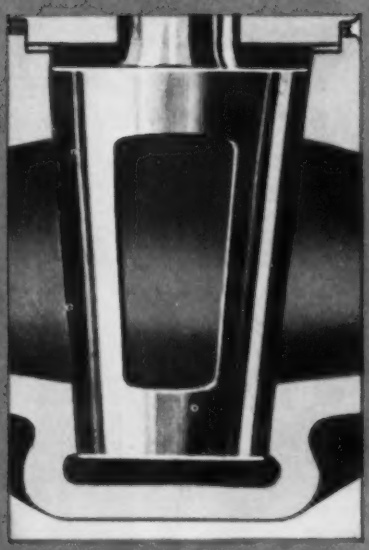




Built-in lever and screw affords instant operation



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P. O. Box 23 Coraopolis, Pa.

sales office manager, Electric Valve Div., The Skinner Chuck Co., New Britain, Conn.

J. F. Hornor, appointed market manager, Brown Instrument Div., Minneapolis - Honeywell Regulator Co.

C. J. Petry, appointed general superintendent and **P. W. Coffman** a s asst. general superintendent, Acme Steel Co., Chicago.

J. B. Barr, named sales supervisor, B-G-R Div., Associated Spring Corp., Plymouth and Ann Arbor, Mich.

H. K. Fish, named electrical superintendent; **A. W. Jurvic,** named asst. electrical superintendent, Weirton Steel Co., Weirton, W. Va., Div. of National Steel Corp.

Wyatt Dawson, promoted to regional manager, Southern district offices, and **Bob DeMott** to sales manager, Los Angeles district sales office, Chain Belt Co., Milwaukee.

Sam Sisto, promoted to assistant sales manager, inside sales, Midland Screw Corp., Chicago.

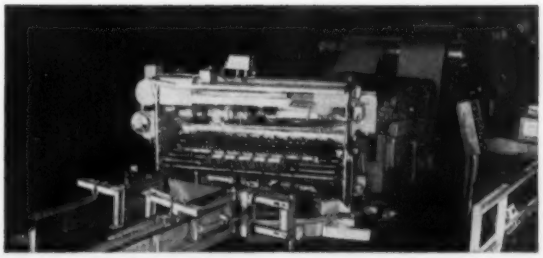
R. C. Atchley, appointed production control manager, Hydreco Div., The New York Air Brake Co., Kalamazoo, Mich.

OBITUARIES

H. C. Walters, 41, works manager, Cleveland Mill Div., Chase Brass & Copper Co.

Lester Long, former vice president and secretary, American Cast Iron Pipe Co.

Cincinnati® Shear swivels for mitre cuts at Budd



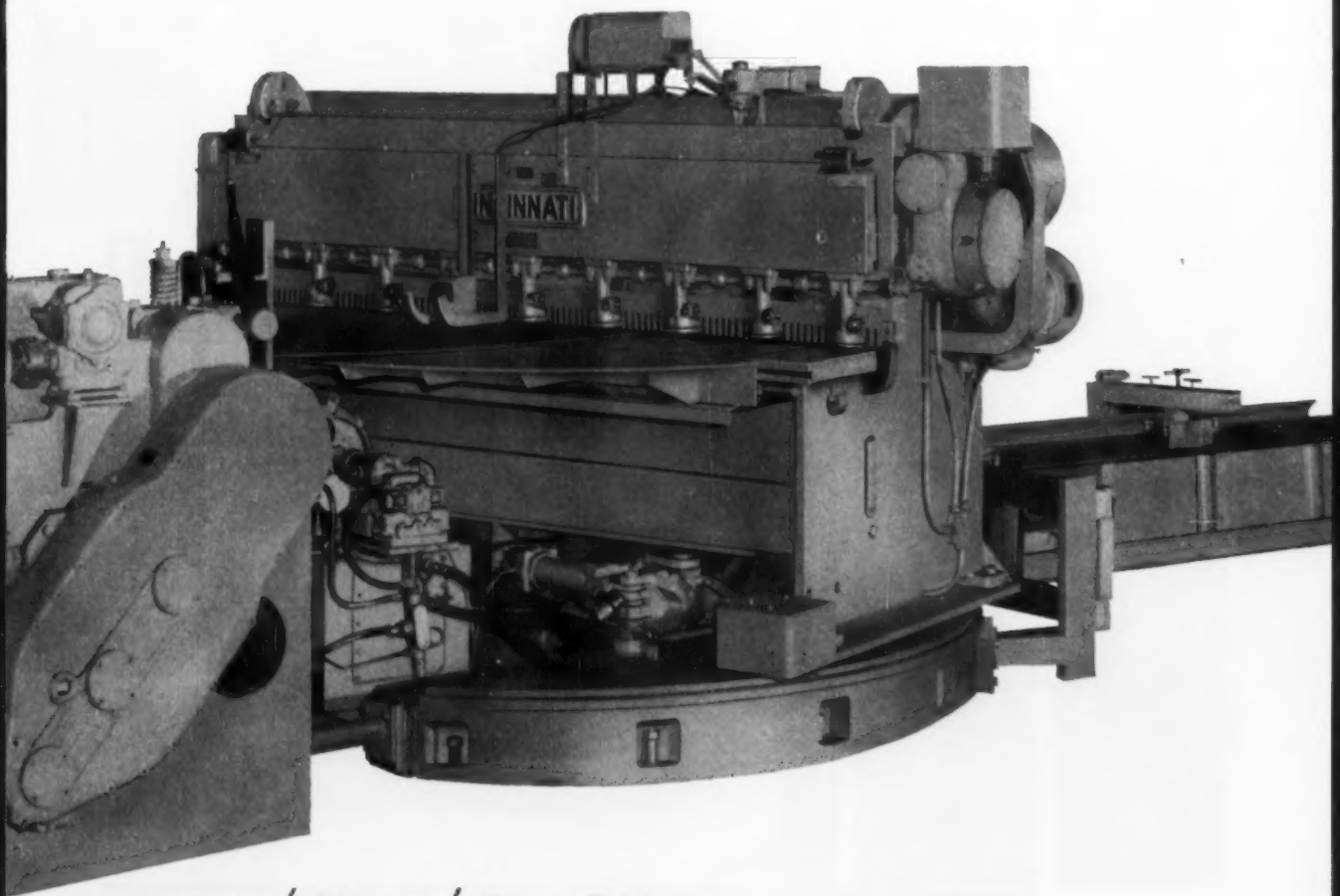
This Cincinnati® Shear is an integral part of an automatic decoil and shear line at The Budd Company's Gary, Ind., plant. It is used for straight and mitre shearing of coil stock into sheets.

Mounted on a swiveling base, the shear can be rotated 22½° to either side of center, so the operator can pre-set the desired angle of cut.

Accuracy must be within ⅛″ per 80″ of feed. Sheet widths range from 24″ to 72″ and thickness from 21 to 16 gauge (.0349″ to .0625″). Since the operation must be automatic and continuous to be economical, Cincinnati dependability is a vital asset.

This shear was specially engineered for The Budd Company. However, most of its profitable features are available with standard Cincinnati® Shears. They include powerful hydraulic hold downs, all-steel interlocked construction, and one-clearance shearing of different metal thicknesses.

Complete details on Cincinnati® All-Steel Shears are included in Catalog S-7R. Write to Dept. B.



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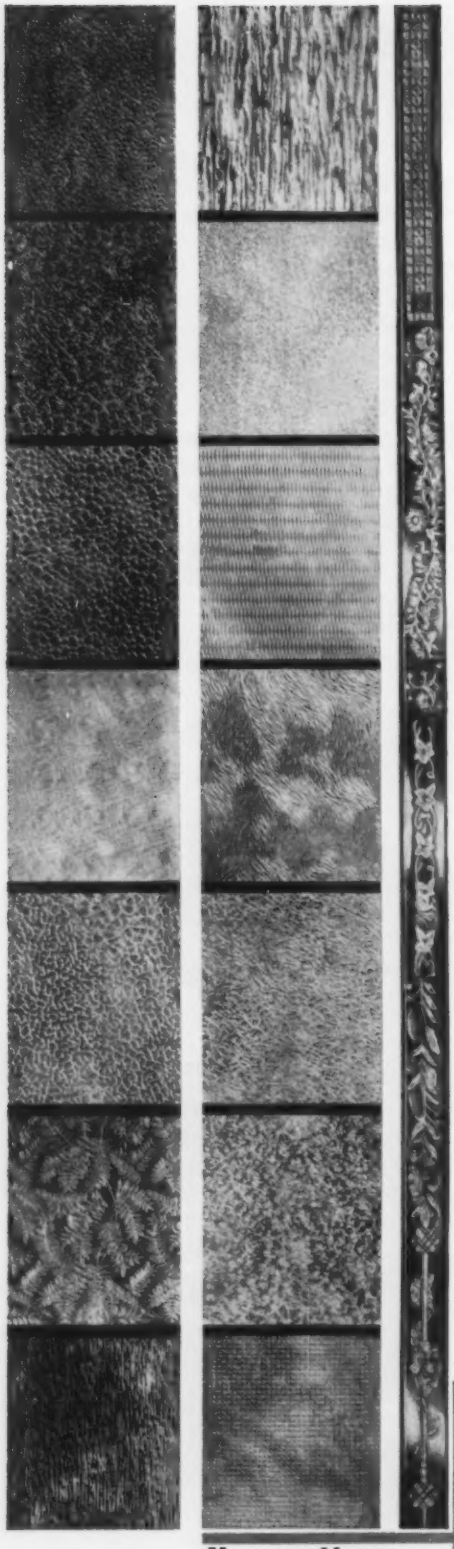
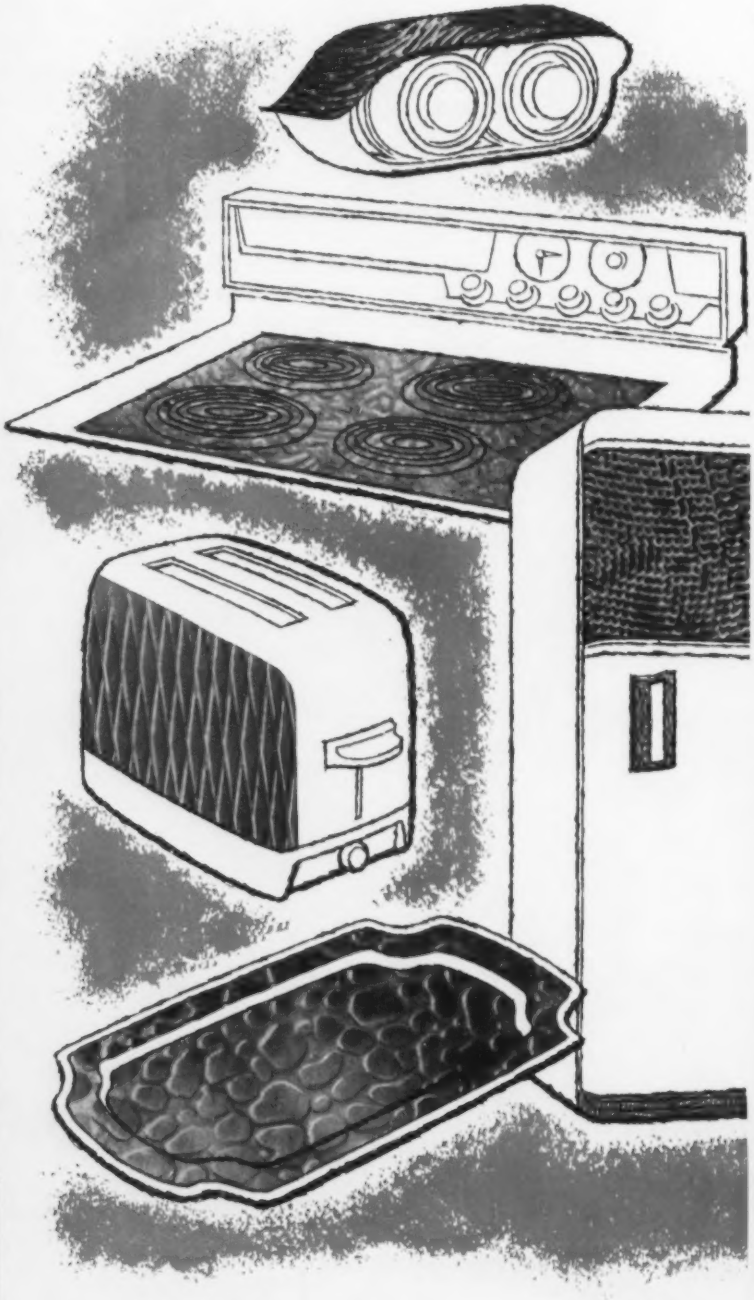
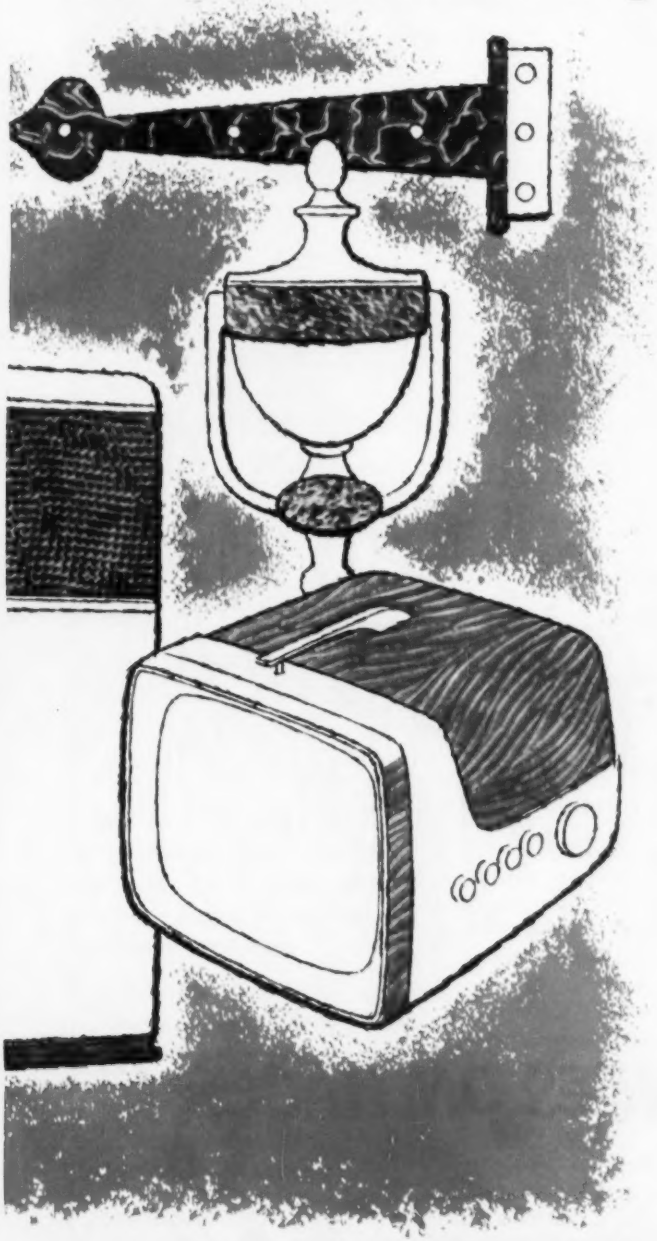




New patterns . . . Here are 19 new embossed Amerstrip patterns. They can be used on any consumer product made of strip steel, such as: escutcheons, hinges, door knockers, TV and radio cabinets, lamps, table tops, trays, dashboards and kick panels, small appliances, and large appliances.

add beauty and "sell" to consumer products



. . . embossed USS Amerstrip

HERE are just a few examples of the way in which embossed Amerstrip steel can enhance the beauty—and salability—of products made with strip steel. And this is *permanent* beauty . . . beauty you add to your consumer products at low cost.

New embossed Amerstrip is an inexpensive way to add charm and distinction to products because you do not have to apply the pattern; the designs are etched on rolls, then pressed into the strip at our strip mill. Once these patterns are applied, they cannot come off; they are permanently rolled into the steel. A wide variety of new patterns are now at your disposal. Embossed Amerstrip has been experimentally fabricated into products to prove that cold drawing does not affect the pattern. It actually draws easier because the pattern helps hold the lubricant.

Embossed Amerstrip has any number of possible applications, including automobile trim, appliances, hardware, and furniture. New embossed Amerstrip—like all types of Amerstrip—is made to meet the standards of highest quality. American Steel & Wire Division has a large, competent technical staff to help you select the embossed Amerstrip your product needs. Put extra beauty—and customer appeal—in your product with embossed Amerstrip Cold Rolled Strip Steel. For full information, call our nearest sales office. American Steel & Wire, 614 Superior Ave., N. W., Cleveland, Ohio.

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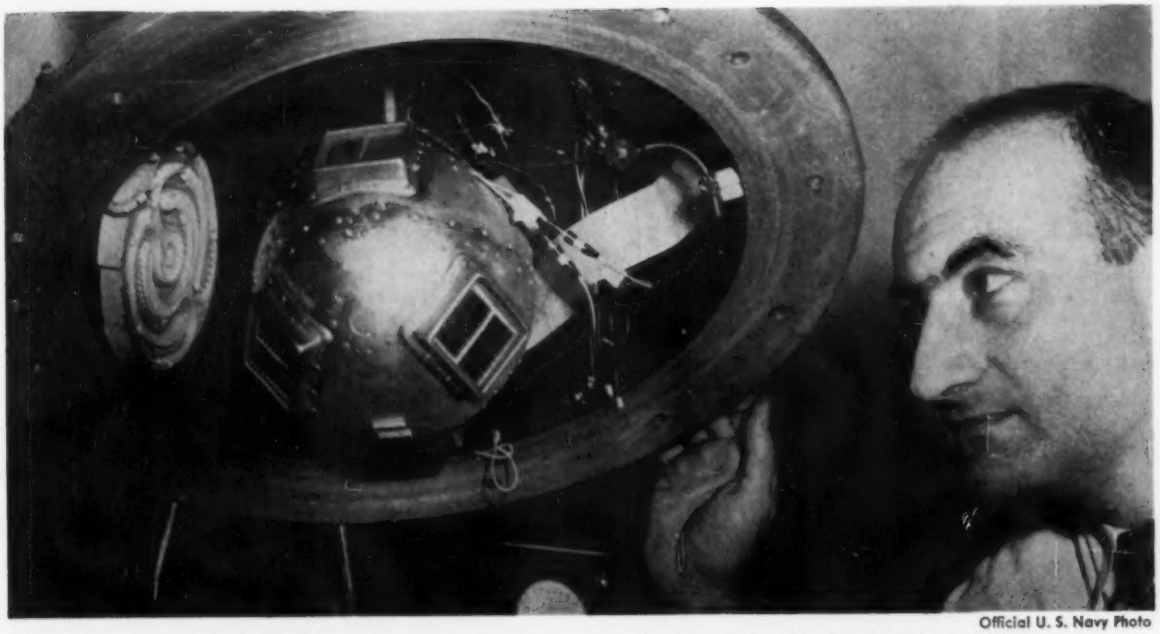


Official U. S. Navy Photo

SIMULATES SPACE: Heat radiated from 6-in. test sphere is checked under simulated orbit conditions.

How Metals Help Control A Satellite's Temperature

Making sure that an orbiting satellite doesn't get too hot or too cold typifies the kind of problem facing producers of space-age hardware.

Definitely a part of metalworking's future, building components for outer space vehicles presents a real challenge.

By P. M. Unterweiser
—Metallurgical Editor

▪ How will the future requirements of space vehicles and satellites affect the metalworking industry? What material and processing problems will have to be faced—and solved? How quickly must the industry move to keep abreast of these new requirements?

It is clear that no one can answer all of these questions with certainty. Even a 1375-page transcript of expert testimony before the Senate's Committee on Armed Services served only to raise more questions than it answers. And responsible government agencies keep changing their signals and ground rules as the space game proceeds.

Need Insight — This is understandable in a rapidly expanding development that depends as much on scientific insight as it does on technical skill. Or as Presidential adviser Dr. J. R. Killian warns: "The history of science and technology reminds us sharply of the limitation of our vision."

The closest we are likely to get to unlimited vision will depend on the bits of information that filter down from actual tests and measurements in outer space. By way of introduction, let's consider two recent case histories—one in orbit around the earth and the other waiting its chance at the Naval Research Laboratory in Washington.

Success in Orbit—TV-(for test vehicle)4 was the designation given a small, 3¼-lb satellite launched by the Navy Dept. last March 17. Slightly more than 10 minutes after it left the test stand at Cape Canaveral, it went into orbit. With its name changed to "1958 Beta" (in recognition of its success), the 6.4-in. sphere began its job of radioing important data to Minitrack stations around the world. These signals, energized by solar batteries,

Satellite Operating Data

	A	B	C
Orbit	200-1500 Mile	200-1500 Mile	200-Mile Circle
Time in Sun, pct	100	75	60
Launching Date	Winter	Winter	Summer
Cloud Cover, pct	100	100	0

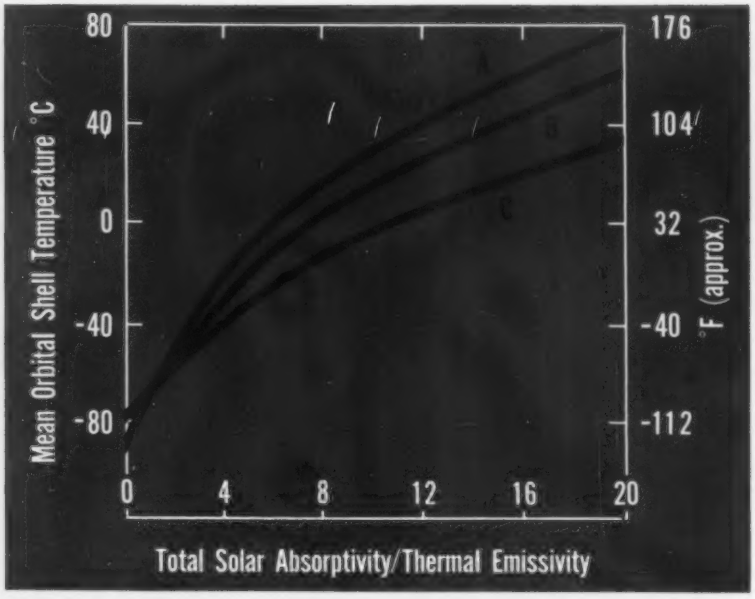


FIG. 1—Mean orbital shell temperature of a spherical satellite is plotted against ratio of total solar absorptivity to thermal emissivity.

are still being received and recorded.

"The eminently successful launching of TV-4," according to the Navy, "confirmed the hope that it would not be necessary to schedule further firings with the small satellite. TV-5 will still be a test flight in many respects, but . . ."

Temperature Critical — For a close-up of TV-5's problems and how they are being solved, here are highlights reported by Navy experts L. F. Drummeter and M. Schach. In general, the problems centering about the satellite vehicle itself involve design, testing, function, and performance. An example of a critically important, specific problem is that of temperature control.

The satellite vehicle contains a number of critical components. These will remain operative within a definite temperature range. Above or below this range, they will fail. The problem is to make sure that all critical components stay within a safe temperature range for a definite period.

Mostly Electrical — The critical components, according to Drummeter and Schach, are electrical-mercury batteries and transistors. These will operate well between 32° and 140°F. Transistors will work below 32°F, but the energy supplied them by the batteries will begin to fall off.

This energy will be cut off completely at about —4°F. Temperatures above 140°F are progressively damaging. The fact that all other parts of the satellite will withstand temperatures ranging from —58° to 392°F is significant but is not the controlling factor.

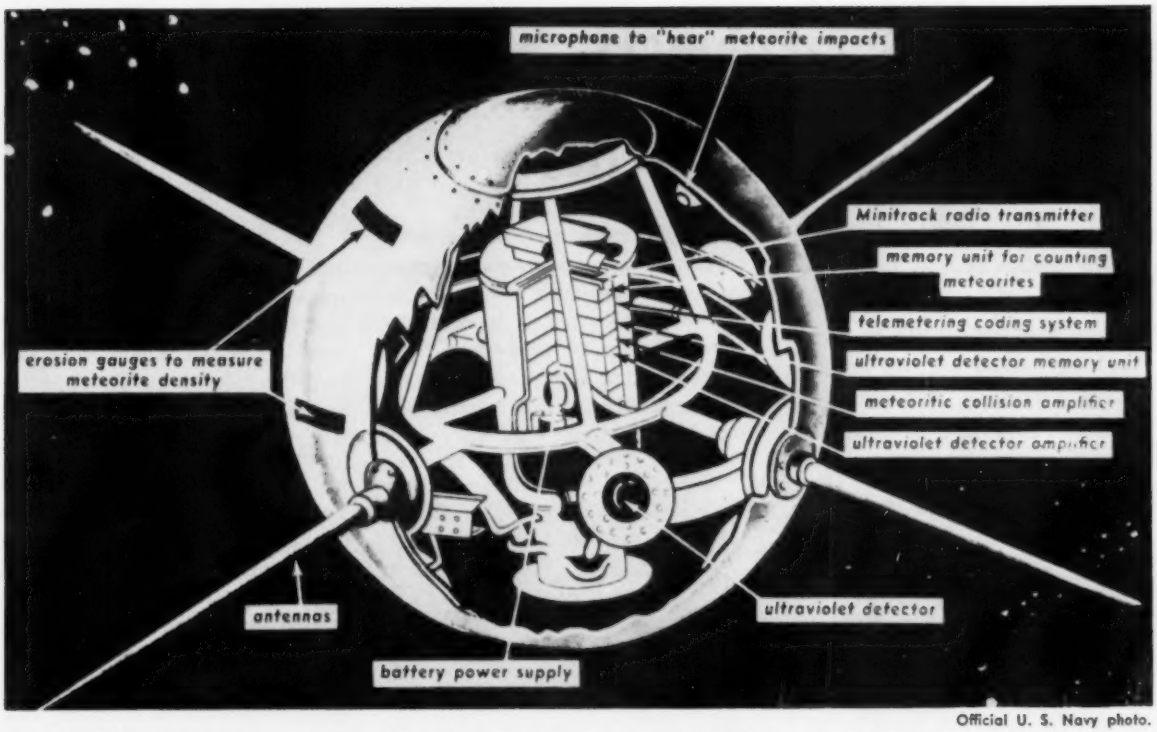
Satellite temperature control can be achieved in many ways. The largest Russian satellite is equipped with a system of surface louvres which open and shut in accordance with pre-arranged thermostatic control. This is evidently feasible for very large satellites with enormous weight-carrying capacity. Otherwise, it is unworkable. So that the methods for controlling temperature must be wholly compatible with all other satellite requirements.

Must Be Seen—Initial specifications insisted that Vanguard satellites be highly visible. Their external surfaces were required to gleam like polished metal. Also, they were to be limited by size and weight.

Design-wise, they were to consist of a package containing electronic components and a surrounding, protective shell. Their temperature controlling systems had to be lightweight and reliable.

But aside from specifications, other limitations are imposed by the two-phase life of a satellite. The first phase begins at launching and involves the transient heating experienced during its trip to outer space. The second phase begins shortly after the satellite attains its orbit. Experts describe this phase as one of "approximate dynamic thermal equilibrium."

Temperature Varies—Carried in the forward end of a multi-stage rocket, the satellite is rather well protected from the most severe aerodynamic heating. In the case of the Vanguard, this protection extends through the first 3 minutes of flight. Then the nose cone is ejected and the satellite is exposed to direct slipstream heating.



Official U. S. Navy photo.

INSIDE VIEW: The electronic "package" is protectively mounted and thermally isolated from outer shell.

Once in orbit, the satellite's shell temperature is subjected to periodic variations, depending mostly on its exposure to the sun's rays. Elaborate calculations have produced close estimates of what these temperature variations are likely to be. Fortunately, they are not likely to exceed a total of about 140°F. Mean orbital shell temperatures are shown in Fig. 1.

Some Unknowns—Although the electronic package is thermally isolated from the satellite shell, there is still the problem of controlling the surface characteristics of the shell. This becomes a complicated matter because of orbital uncertainties. A predicted temperature range of between 5° and 99°F is allowed for taking care of orbital unknowns. For all other "uncertainties," the temperature variation is calculated to range from —9° to 113°F.

A highly polished metal surface, unfortunately, produces extremely high skin temperatures. (Organic plastic material simply disintegrates due to intense ultra-violet exposure.) How can this be overcome without seriously altering the visible reflectivity of the surface? The answer is found in a thin coating of dielectric material which is "transparent to the visible wavelengths and relatively opaque to the infrared."

Made of Magnesium—Here are some details of the processing required. To save weight, the shell is made of magnesium. Its surface is gold plated and covered with a thin, evaporated layer of silicon monoxide. This coating is then overlaid with an opaque film of evaporated aluminum for high reflectivity. A final film of partially oxidized silicon monoxide provides the surface with a fixed value of emissivity. To reduce radiation, the satellite's antennae are also coated with this dielectric material.

Thermally isolating the electronic package from the outer shell is equally complex. For mechanical support of the package within the shell, plastic Kel-F supports are used. To reduce thermal conductivity to a minimum, these supports are coated with evaporated metal.

Covered With Gold—The central can housing the electronic equipment is gold plated. So, too, is the inner surface of the protective shell. The combination results in a minimum of radiative power transfer.

All of these are temperature controls that derive their effectiveness from the inherent properties of metals and coatings. Other controls, in the form of gadgetry, are also available.

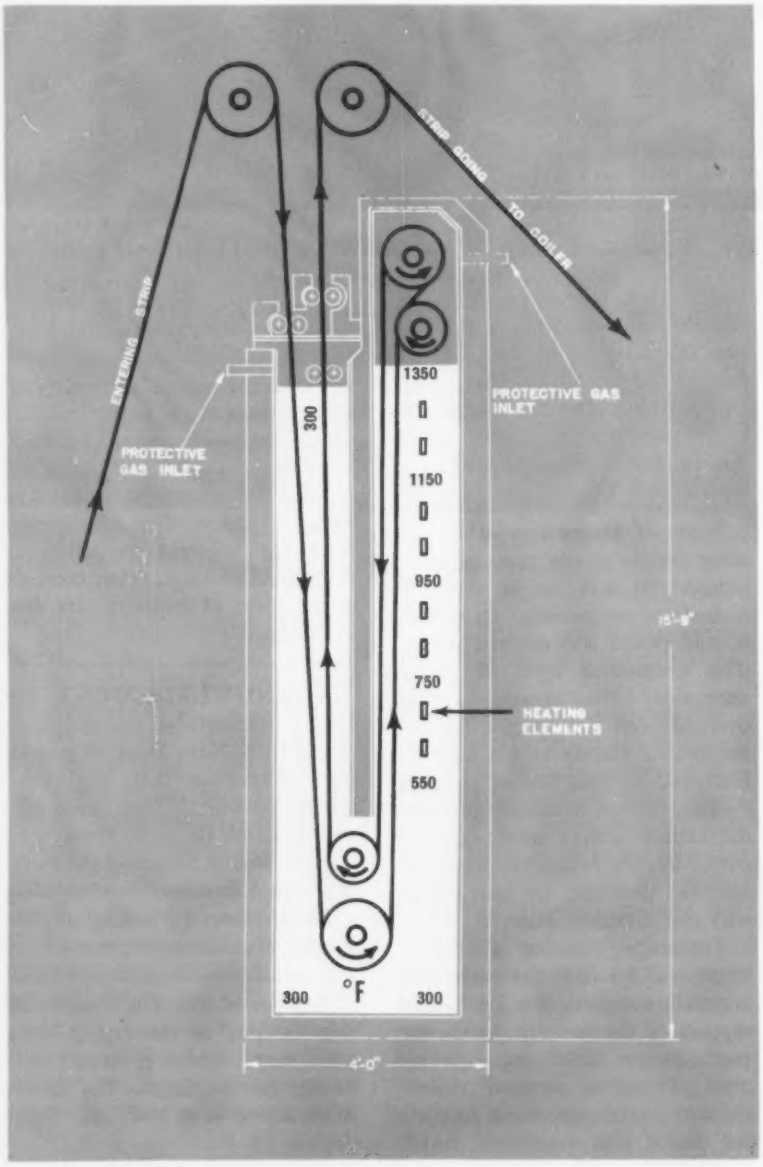
ACKNOWLEDGMENT The editors acknowledge the assistance of the U. S. Navy Dept. in providing information that made this article possible. They especially want to thank Dr. L. F. Drummeter and Mr. Milton Schach of the Naval Research Laboratory for providing technical data pertaining to the control of satellite temperature.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Process Speeds Strip Annealing In Liquid Sodium

Annealing steel strip in a liquid sodium bath is faster and far more efficient. And the annealed product claims to match that processed by any conventional technique. Efficient heat transfer cuts fuel consumption.

▪ To get vastly improved results sometimes requires a radically new approach. Just such an approach was recently applied to the continuous annealing of steel strip. It's a process that is fast, dependable, and unusually efficient in terms of fuel consumption.



The new process is unique in that it uses liquid sodium as the heating medium in place of conventional furnace equipment. Sponsored by Wean Engineering Co., Inc., the process was developed by Associated Engineers, Pittsburgh.

Note Economy — With a total strip travel of only 30 ft, the new process should equal or surpass the production rate of conventional strip annealing equipment with as much as 2100 ft of strip travel in the furnace. Based on extensive testing, annealing quality is at least as good as can be obtained by conventional means. At the same time, fuel consumption should be reduced by as much as 85 pct.

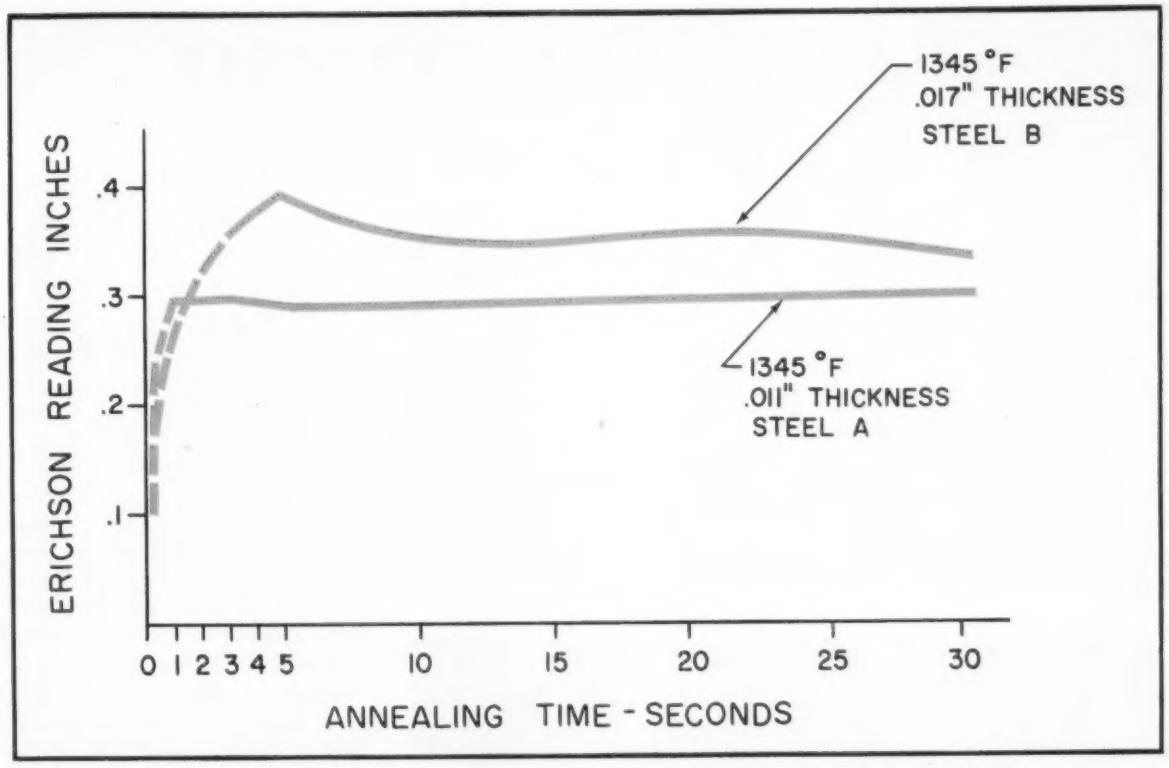
Although the use of liquid sodium is new to strip annealing, it is in regular use in other important fields. Its performance in annealing strip has been checked out on a laboratory basis for more than 5 years.

Moves Fast—As shown in the diagram, the apparatus consists of a bath of molten metallic sodium (not a salt bath). Gradations of temperature range from about 300°F at the place where the strip enters the sodium, to about 1350°F maximum. After reaching annealing temperature, the direction of the strip is reversed.

The strip travels back through regions of decreasing temperature in the sodium. It gives up most of its heat to the incoming strand of strip and leaves the sodium bath at about 300°F. This is below the temperature at which a visible oxide film can form on the strip surface.

◀

CONTINUOUS ANNEALER: Steel strip enters liquid sodium bath at 300°F. and reaches annealing temperature (1330°F.) in seconds.



QUALITY COUNTS: Erichsen cup test results prove that liquid sodium annealing produces drawing quality comparable to other techniques. Rapid annealing is handled in 2 seconds or less. Strip travels 30 ft.

Saves Heat—In a conventional continuous annealer, the rate of heat transfer is low. This stems from the smooth, radiation-reflecting surface of the strip. The heat-transfer coefficient in a radiant-tube heating section is of the order of Btu/sq ft/hour/°F. In a salt bath, it may increase to about 100. In contrast, even stagnant liquid sodium produces the extremely high rate of about 1400. This increases to about 6000 at strip speeds of 1000 fpm.

Rapid heat transfer has a number of important advantages. Required length of strip travel can be greatly reduced, with a corresponding reduction in capital investment. An annealer for 1000 fpm, handling tin plate stock (0.010 in. thick), need not be more than about 15 ft high, 6 ft long, and 4 ft wide. Such a unit could anneal strip 32 in. wide at a rate of over 30 tons per hour.

Avoids Problems—Because heat transfer can be as fast during cooling as it is during heating, an 85 pct reduction of fuel consumption can be attained along with high production rate. The problem of "atmosphere collapse" occurring in the huge chambers of conventional furnaces can be entirely avoided.

Maximum sodium temperature need not be more than 50°F above the optimum annealing temperature for low-carbon steel (about 1330°F). Flow can be stopped with the strip in the sodium without harming the strip. This means that loopers are not required. There is virtually no danger of burning the strip, and long shut-downs for rethreading are eliminated.

Good Drawing — Rapid heat transfer has the advantage of raising the strip to annealing temperature very quickly—in 2 seconds or less. Annealing takes place almost instantaneously. The chart shows Erichsen cup test results obtained with cold-reduced, low-carbon strip (0.017 in. thick). Annealed in sodium, the material shows excellent drawing characteristics.

Can steel strip be properly annealed in an extra-short annealing cycle? Tests indicate that annealing cycles of 1 to 3 seconds followed by 10 seconds slow-cooling time are entirely adequate. Annealing time does not affect the age-hardening characteristics of the steel.

Other Application—In developing the new process, many problems had to be solved. In addition to safety measures, there were the problems of drag-out of sodium on the strip, means for sealing shafts, and means for pumping the sodium. Answers to many of these problems were solved by the AEC, which uses sodium regularly in reactors. Liquid sodium is actually less hazardous to work with than molten steel.

According to its developers, the new annealing process can also be advantageously combined with continuous hot-dip galvanizing.

Hot-Cup Cold-Draw Process Forms to Tight Dimensions

When hot forging and cold forming are combined in a single process, the net result shows savings in material, time, and labor.

Now producing close-tolerance ordnance shells, here is a new approach with a strong commercial potential.

By R. O. Schulin, Associate Editor

▪ The relatively new art of cold extrusion of steel took a giant step forward this week when ACF Industries and the Army Ordnance Corps announced successful production of 8-in. ordnance shells by a hot-cup cold-draw process.

In a marriage of the best hot forging and cold forming practices, by extrusion and draw, ACF has been able to turn out a superior shell at substantial savings in material, time, and labor. Previously, the largest shell made by cold forming was the 155 mm size.

HOT FORGING: First step in ACF's hot-cup cold-draw shellmaking process is heating billet to 2150°F and forging it into a cup.

New Plant Built—ACF is turning out 8-in. shells at a new $8-million plant at Berwick, Pa., at a rate "slightly better than 125 pieces an hour," says E. A. Watson, asst. vice president-manufacturing.

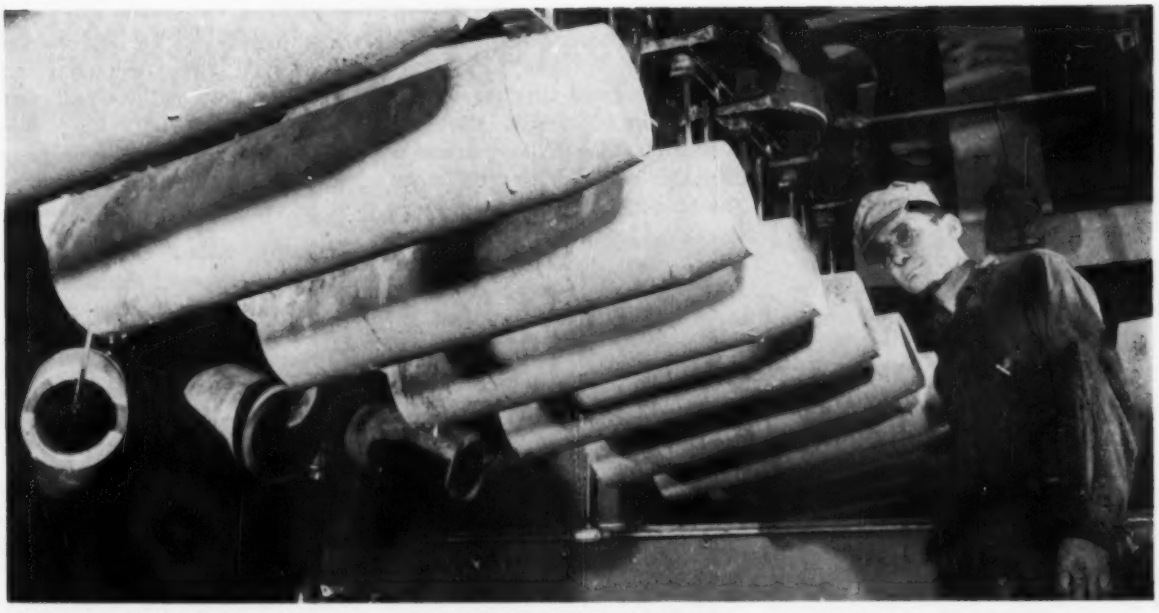
The new process was five years in the experimental and development stage. A year ago the first pilot batch of shells was turned out. The new plant—designed and built specifically for the hot-cup cold-draw line—houses a mile-long conveyor serving a highly mechanized production line. Design and product engineering of the entire installation, including special machinery, were the work of ACF engineers.

The Advantages — The process allows use of low-carbon steel, eliminates the need to heat treat the pieces by quench and temper, and requires less machining.

"The key to cold-extruding heavy steel shapes under extreme pressure through dies, is a process of coating a piece of steel with zinc phosphate which acts as a host to a soap lubricant," explains Mr. Watson.

Another bonus offered by the process is the consistency of finished piece dimensions. Mr. Watson described the reject rate as "insignificant."

Weight Savings — The conventional hot forging method of making shells requires an initial starting "mult" nicked and broken from a round-cornered square billet weighing 250 lb. A finished shell weighs 162 lb. The hot-cup-cold draw method now uses a 189-lb mult of the same cross-section to make the same end product—a weight saving of over 25 pct in starting material alone.



LUBRICATING: Forgings emerge from zinc phosphate lubrication bath, key to cold-extrusion process.

Under the hot forging method, specified mechanical properties of yield, elongation, and reduction in area are achieved by response to heat treatment of a 0.55-0.65 pct C steel. The hot-cup cold-draw method gets the same mechanical properties by the effect of cold-working of 0.20 pct C steel, maximum.

Heat Treat Shortcut—ACF engineers point out that the new method uses two selective heat treatments by induction: One after forward-extruding the machined hot cup prior to the coining and drawing operations, and the second after drawing, prior to nosing. The cold nosed shell is stress relieved prior to the conventional finishing operations.

These heat treat steps eliminate a complete heat treatment cycle required in the conventional shell-making method.

Machining Reduced—In the area of machining, a total of 25 to 30 lb of metal are removed in the hot-cup cold-draw process compared to 70 to 80 lb removed in the best conventional practice. Bulk of the material removed by machining in the hot-cup cold-draw process occurs while turning the hot forged cup, facing and chamfering the drawn piece, facing, boring, and tapping the nose, and preparing the band groove.

Unmachined shells are fed automatically into special lathes which produce a finished surface in one cut in a matter of minutes. These operations not only save time and billet steel but also reduce the demand for cutting tools.

Firing Tests—Ordnance officials say that the new technique permits savings that would be most important during a national emergency when both steel and manpower might be in short supply.

Wholehearted Army support of this new shellmaking method was not forthcoming until hop-cup cold-draw shells were test-fired at Army's Jefferson Proving Ground, Madison, Ind. The new shells traveled farther on the same powder charges than conventionally produced shells. They also had better balance and concentricity, and were more accurate.

Firing tests revealed that the group of hot-cup cold-drawn shells landed within a smaller target circle than conventional shells.

Loading Advantage—An Army analysis showed a unit weight spread of 18 oz in the cold-extruded shells with a correspondingly consistent volume, compared to a 4.8 lb acceptable range permitted with hot-forged shells.

At the munitions plant, the consistent cavity volume of the new shells permits powder charge loading in the most desirable of four acceptable zones. This greatly speeds up the loading process, ordnance officials say.

Smoother Surfaces — Furthermore, the increased range of the shells is made possible by the less than 40-microinch surface finish of these shells. This compares to a 250-microinch finish allowed for the machined surface of the same shell made by the conventional method.

The 8-in. shell is 75 pct larger in area than any shell previously attempted by the cold-working process. In the initial feasibility study by ACF, the following observations were disclosed:

1. Low carbon billets could be sheared as well as sawed.
2. Several phosphate - lubricant proprietary systems were adequate.
3. Induction heat treat patterns

could be controlled for hardness to a predetermined length of ± ¼ in.

4. Tonnage needs for all operations would not change much for different heats of steel within the chemistry specified.

5. The nosing operation can be done well in one press stroke without internal support.

6. Tool design would have to be very precise and closely controlled to permit unrestrained extrusion and drawing without metal parting and cracking.

Logistics Rundown—The logistic advantages of the hot-cup cold-draw shell are numerous, say ordnance men.

Fewer railroad cars are needed to transport billets from steel mill to shell plant. A higher percentage of rounds should reach their target. The one-zone loading eliminates chance of selection errors during night artillery operations. The closer scatter minimizes tragic results of those hits on the short side of the target circle.

Commercial Possibilities—While the new hot-cup cold-draw process has created quite a stir among ordnance men, it proves that large steel shapes can be cold worked successfully. Its limitations are relative to press and steel mill capabilities.

The ACF process opens up a new avenue for commercial applications of cold-formed steel.

Finally, Labor Savings — The elaborate automatic handling setup at Berwick indicates that hot-cup-cold-draw is easily adapted to modern work handling methods.

ACF's mechanized system permits employment of workers of lower skill levels to operate the equipment.

The Sequence—Here is a description of ACF's hot-cup cold-draw sequence:

A round-cornered square, hot-rolled billet 7⅜ in. square is sheared into sections weighing about 190 lb.

The billet section is heated to 2150°F and hot-forged into a cup.

A rough machining operation puts a face on the open end of the forging, removes retained billet surface defects, assures concentricity and controls weight.

Then the forging gets the first of three zinc phosphate lubrication treatments.

Following are a cold forward extrusion operation, the second phos-lubrication, coining and drawing, and the final phos-lubrication.

The shell is then ready for the one-step nosing operation, considered by ACF to be a process highlight.

After nosing, the shell wall has the exact shape required by military specifications and is ready for stress relief and final operations. These include grinding the bourrelet; facing, boring, and threading the nose; machining the band seat; applying the band; welding the base plate; pre-paint phosphatizing, and spray painting.

After final inspection and acceptance by the Army Ordnance Corps, the shell is palletized and loaded into a box car for shipment to the munitions plant.

COLD EXTRUDING: Cold-forming begins with forward extruding operation on shell. Phos-lubrication separates die steel from piece.

Fine Synthetic Fiber Material Blocks High Heat

A new process makes crystals of potassium titanate take the form of very fine fibers.

Compacts of these fibers offer very high heat resistance even at low bulk densities.

SCATTERS INFRARED RAYS: Temperatures upward of 2000°F fail to penetrate ½-in. block of du Pont's new fibrous potassium titanate.

▪ Space-age insulating problems may be solved by a new lightweight material called fibrous potassium titanate. The new product is composed of a compact mass of crystalline fibers which are so fine they give it a talc-like feel. Because of the small diameter (less than 1/25,000 in.) and high reflectance of the fibers, the new material blocks heat penetration by scattering incoming infrared rays.

The product was developed by the du Pont Company's Pigments Dept. It is now produced on a semi-scale at du Pont's Newport, Del., plant.

Fibrous potassium titanate appears best suited for insulation where space and weight are critical. In the 1300° to 2100°F range, it's about twice as effective on a volume basis as any known insulation.

Broad Potential—As a thermal insulator at high temperature, fibrous potassium titanate may offer construction advantages for rockets and missiles, aircraft and atomic-powered vehicles. Suggested but as yet untried uses include insulation for missile nose cones and rocket combustion chambers.

Other suggested uses include electrical and accoustical insulation, reflective shielding for heating units and ovens, gaskets and packing. It might also go into filters, fire blankets and protective clothing, high temperature paints or coatings, high temperature cement and caulking. Or, the material could be used as paper filler and plastic reinforcement. Blocks of it can be formed into any desired shape while wet.

After six days aging at 1900°F, blocks of the new material have shown no dimensional change. Fibrous potassium titanate has almost four times the insulating value of commercial firebrick, yet is only one-twelfth the weight.

Many Forms—One of the unusual advantages of the product is ease of fabrication. Presently available forms include loose fibers, loose fill, blocks of varying densities, mats of various thicknesses, and "lumps." Also available is a trowelable material; combined with water, it can be spread onto almost any irregular surface like mortar.

Formed blocks of the material have a normal density of 12 to 15 lb per cu ft. Densities of about 70 lb per cu ft are obtained by pressing wet mats dry at 2000 psi.

Does Moisture Control Benefit Blast Furnace Air?

By C. E. Agnew—Consultant, Shaker Heights, O.

Arguments for and against moisture additions to blast air have raged for half a century.

Here are some new thoughts on the old controversy.

▪ Will control of water vapor in blast air give higher output and lower costs? This has long been a subject of debate among blast furnace operators and technicians.

There are two main schools of thought, based on the opposed theories of Gayley[1] (removal of water vapor from blast air), and Fulton[2] (adding water vapor and molding it to a fixed content). Mathematically, both theories are correct. But most attempts to apply them in actual furnace operation have failed to yield the benefits predicted.

This shows there is a dominant operating principle in every furnace operation which neither theory takes into consideration. It must be served before any change in natural atmospheric air can be utilized.

What It Is—A blast furnace can't prepare stock for smelting faster than it can smelt prepared stock. Inversely, it can't smelt stock faster than it can prepare stock for smelting. Therefore, the need to maintain balance between all parts of the process is the main principle of every blast furnace operation. Blowing, blast heating, and stock travel rates are methods which serve the main principle, rather than principles in themselves.

Maintaining b a l a n c e requires proper division of heat between parts of the process. Heat needs of the respective divisions will vary with, and be determined by, properties of raw materials being processed.

Weight of blast air always is greater than weight of any other raw material used in making a unit weight of iron. Therefore, the amount of heat (Btu) consumed in dissociating blast air water vapor into hydrogen and oxygen always is a major factor in determining equitable division of heat.

Air Is Never Dry—For practical purposes of blast air calculation, dry air, by weight, may be considered as containing 23 pct O_2 and 77 pct N_2. However, dry air never exists in a natural state. Atmospheric air always contains some water vapor mechanically mixed with it; the amount is a variable determined by atmospheric temperature and pressure. Five grains of water per cu ft air is the average and 2 to 8 grains a typical range.

Because the compound H_2O (by weight, 11.11 pct H_2 and 88.89 pct O_2) cannot live at temperatures in the coke combustion zone at blast furnace tuyeres, it dissociates into its component parts virtually the instant it enters this zone.

By actual analysis, it takes 5781 Btu to dissociate 1 lb of water. Heat generated with oxygen released by the breakdown is 2913 Btu; so net consumption of heat per lb H_2O dissociated is 2868 Btu.

Increases Heat—The Gayley dry blast theory advocates removal of water vapor contained in atmospheric air, thereby increasing the amount of heat available to the furnace from combustion of coke carbon at the tuyeres. Btu's are raised to the amount which must be consumed for dissociation of water vapor contained in atmospheric air.

The respective quantities of heat can be calculated. Mathematical correctness, insofar as making more heat available at the tuyeres, is sustained by the need to reduce blast temperature at virtually all furnaces where it's been applied.

In short, the practice always has provided an increase of heat in the smelting division of processing. But there's no way to consume it there. So maintaining balance between divisions of processing forces a lower blast temperature to counteract ill effect of higher available heat on temperature relations existing in the furnace mid-section.

More Oxygen—The Fulton theory of wet blast calls for adding water vapor to natural atmospheric air and maintaining a fixed content. The idea is to provide more oxygen with any given volume and/or weight of air. This would increase the rate of coke carbon combustion at the tuyeres and increase the rate of stock travel through the furnace.

The two rates of increase can be calculated. While it's mathematically correct, the wet blast theory hasn't proved out well in actual practice. Here again the dominant principle of maintaining equilibrium between divisions of processing asserts itself. With more heat consumed for water vapor dissociation and higher heat needs per unit of time, due to increase in the stock travel rate, control can be maintained only through reduction in burden weight. This defeats the theoretically calculated benefit of wet blast.

Uses Coke Three Ways — The rate at which burden materials descend through a blast furnace is

TABLE I | Comparison of Blast Air Chemical Compositions

SECTION A

H_2O per cu ft air, grains	Air vol, pct	H_2O* vol, pct	Air weight, lb	H_2O weight, lb	Air O_2 @ 23 pct, lb	Air N_2 @ 77 pct, lb	H_2O O_2 @ 88.89 pct, lb	H_2O H_2 @ 11.11 pct, lb	Total Oxygen, lb	Blast weight, lb	(Air – H_2O – Mix) O_2, pct	N_2, pct	H_2, pct
5	98.5	1.5	7494.37	70.36	1723.70	5770.67	62.54	7.82	1786.24	7564.73	23.61	76.29	0.10
10	97.0	3.0	7380.24	138.57	1697.45	5682.79	123.18	15.39	1820.63	7518.81	24.22	75.58	0.20
20	94.0	6.0	7151.99	268.57	1644.95	5507.04	238.74	29.83	1883.69	7420.56	25.39	74.21	0.40
30	91.0	9.0	6923.73	390.00	1592.45	5331.28	346.68	43.32	1939.13	7313.73	26.51	72.89	0.59
			decrease, 7.61 pct	increase, 454.29 pct	decrease, 7.61 pct	decrease, 7.61 pct	increase, 454.33 pct	increase, 453.97 pct	increase, 8.55 pct	decrease, 3.31 pct			

SECTION B

Air O_2, pct	23.0000	7494.37	70.36	1723.70	5770.67	62.54	7.82	1786.24	7564.73	23.61	76.29	0.10
Air O_2, pct	24.0065	7494.37	70.36	1799.14	5695.23	62.54	7.82	1861.68	7564.73	24.61	75.29	0.10
Air O_2, pct	25.0158	7494.37	70.36	1874.78	5619.59	62.54	7.82	1937.32	7564.73	25.61	74.29	0.10
Air O_2, pct	26.0252	7494.37	70.36	1950.43	5543.94	62.54	7.82	2012.97	7564.73	26.61	73.29	0.10
	increase, 3.0252 pct			increase, 13.15 pct	decrease, 3.93 pct			increase, 12.69 pct				

SECTION C

Air O_2, pct	23.0000	7494.37	70.36	1723.70	5770.67	62.54	7.82	1786.24	7564.73	23.61	76.29	0.10
Air O_2, pct	24.0037	7189.20	68.13	1725.68	5483.52	60.56	7.57	1786.24	7257.33	24.61	75.29	0.10
Air O_2, pct	25.0134	6908.46	65.47	1728.04	5180.42	58.20	7.27	1786.24	6973.93	25.61	74.28	0.10
Air O_2, pct	26.0126	6648.88	63.01	1730.23	4918.65	56.01	7.00	1786.24	6711.89	26.61	73.28	0.10
	increase, 3.0126 pct	decrease, 14.49 pct	decrease, 10.44 pct	increase, 0.37 pct	decrease, 14.76 pct	decrease, 10.44 pct	decrease, 10.49 pct		decrease, 11.27 pct			

Section A—Maintaining 100,000 cu ft blast air (@ 62°F and 14.6963 lb P) while varying H_2O content.

Section B—Maintaining blast weight constant to the 100,000 cu ft weight while increasing oxygen content of air with free oxygen, in multiples of 1.0 pct.

Section C—Maintaining oxygen content in blast equivalent to content of 100,000 cu ft air while reducing blast weight.

Note: Percentage figures indicate maximum change for the range of conditions calculated.

H_2O contents of Sections B and C are held constant at 5 grains H_2O per cu ft air.

* H_2O volume approximate.

determined by the rate coke is consumed. Aside from loss of coke dust with flue dust, coke is consumed in three ways: Direct reduction of burden oxides by coke carbon, absorption of coke carbon by the solution loss reaction, and combustion of coke carbon at the tuyeres by oxygen contained in incoming blast air.

Each is a variable caused by changing chemistry of burden materials and by the rate oxygen is delivered to the tuyeres. Always, the third item is the main factor.

However, the rate at which burden materials can be allowed to descend through a furnace is determined by the rate of processing reactions, not by how fast coke is consumed. Any furnace will "go cold" if overblown.

Assume a furnace operating at its maximum driving rate with use of atmospheric blast air will take an

"Adding water and/or oxygen to blast air helps control furnace operation, but both will add to cost."

average of three charges per hour or 72 charges in 24 hours. A 10 pct increase in stock travel rate would be only 0.3 charge per hour and 7.2 charges in 24 hours. But a 10 pct increase in stock travel can rarely, if ever, be sustained, even with a good bit lower burden weight—and never without it.

Time is Critical—Actual furnace operation proves there's a maximum permissible stock travel rate for any given class of burden materials and for any given burden weight. The travel rate is determined by how long it takes to complete processing rather than by mere provision of heat.

Blast heat will counteract ill effect of blast moisture. As long as there is enough blast heating capacity in reserve, blast temperature can be adjusted to meet changing needs of heat for breakdown of varying amounts of water vapor in blast air.

Blast heat does help cut the fuel rate. But use of it to counteract deliberate additions of moisture to blast air is destructive to overall economy.

Hydrogen is a more active reducing agent for iron oxide than carbon monoxide. But as long as gas discharged from the top of a blast furnace contains any CO, its capacity to reduce iron oxide will not have been exhausted. Regardless of how "cold" a furnace may get, the percentage of unreduced iron in slag tapped from it is rarely as much as 1.0 pct. Therefore, the more active reducing ability of hydrogen is of no value to actual furnace operation.

Oxygen Enrichment—Successful and/or efficient use of oxygenized blast air always will depend on existing operating conditions as determined by the class of burden materials being processed. If the stock travel rate is below the permissible maximum it can be increased with addition of oxygen to the normally used volume of blast air. If the rate is at the permissible maximum it can be held there with a reduced volume and/or weight of blast. This is done by enriching the reduced volume with enough oxygen to maintain optimum delivery of oxygen to the tuyeres.

Unless air drying equipment is provided, all furnaces must use atmospheric air for blast. Since 5 gr H_2O per cu ft air is a typical average content of atmospheric air it is used in the accompanying tables to illustrate a base stock travel rate. Percentage increases and decreases in constituent weights and in quantities of heat show the consistent ill effects of moisture additions and the potential benefits of adding free oxygen.

Where increase in the existing stock travel rate is permissible, it can be done to better thermal advantage through enrichment of atmospheric air with oxygen alone, than with addition of water vapor alone or any combination of the two. However, facts of practice preclude getting a stock travel rate equal to rates which can be calculated with addition of moisture or free oxygen.

Raises Cost—Adding water vapor to atmospheric air in conjunction with oxygen enrichment is like reducing blast temperature with use of dry blast air. Both practices counteract effect of heat in the smelting division, in excess of the amount which can be consumed there, while maintaining the vital balance between divisions of processing. In short, both practices help control furnace operation, but both add to cost.

For any furnace operation, the Column X (Table II) requirements will be a complement of the stock travel rate. Lessening of time available for stock processing has a big effect on keeping a balance between divisions of processing. The crux of the problem governing effective use of heat may well be described as the relationship existing between the Column X requirements and Btu available to the furnace per pound of blast.

From this premise the progressive increase in heat needs and progressive decrease in available time and in available heat, due to addition of moisture to blast air (see Section A, Table II), proves the practical and economical fallacy of such additions.

In Theory Only—Also from the premise, the seeming similarity of benefit to available heat from addition of oxygen to atmosphere air (Sections B and C, Tables I and II) can be grossly misleading. Btu available per pound of blast are virtually identical with the two methods of enrichment. But there are big differences in their respective relations to Column X requirements, to weight of gas which must pass through the stock column, and to quantity of heat (Btu) carried from the furnace by gas discharged from it.

Specifically, the Section B method creates a stock travel rate which doesn't jibe with facts of practice governing that rate. Quantity of heat made available with the method appears adequate for demands of the increased stock travel rate. But it can't be utilized because of effect of the travel rate on maintainance of equilibrium between divisions of processing.

Cuts Gas Needs — In contrast, with the Section C method of oxygen enrichment, relations of the optimum stock travel rate and the Column X requirements remain constant. Heat available to the furnace per pound of blast is substantially increased while weight of gas which must pass through the furnace, and quantity of heat carried from the furnace by gas, are substantially reduced.

When the furnace is burdened with regard for effect of burden chemistry on temperature in the furnace mid-section, the Section C method of oxygen enrichment per-

TABLE II | Comparison of Blast Air Thermal Effectiveness

H_2O per cu ft air, grains	Blast weight, lb	Oxygen in Mix, lb	Carbon to CO, lb	Stock travel rate	X	Btu generated, 4370 Btu per lb C	Btu consumed, 2868 Btu per lb H_2O	Btu available to furnace	Btu available to furnace, pct	Btu available per lb blast	Btu lost, pct
SECTION A											
5	7564.73	1786.24	1339.68	1.00	1.00	5,854,401	201,792	5,652,609	96.55	747.2	3.45
10	7518.81	1820.63	1365.47	1.02	1.02	5,967,104	397,418	5,569,686	93.34	740.7	6.66
20	7420.56	1883.69	1412.76	1.06	1.06	6,173,761	770,259	5,403,502	87.52	728.1	12.48
30	7313.73	1939.13	1454.34	1.08	1.08	6,355,466	1,118,520	5,236,946	82.40	716.4	17.60
	decrease, 3.31 pct	increase, 8.55 pct	increase, 8.55 pct	increase, 8.00 pct	increase, 8.00 pct	increase, 8.55 pct	increase, 454.29 pct	decrease, 7.35 pct		decrease, 4.12 pct	
SECTION B											
	7564.73	1786.24	1339.68	1.00	1.00	5,854,401	201,792	5,652,609	96.55	747.2	3.45
		1861.68	1369.26	1.04	1.04	6,101,656	201,792	5,899,854	96.69	779.9	3.31
		1937.32	1452.99	1.08	1.08	6,349,566	201,792	6,147,774	96.82	812.6	3.18
		2012.97	1509.72	1.12	1.12	6,597,476	201,792	6,395,689	96.94	845.4	3.06
		increase, 12.69 pct	increase, 12.69 pct	increase, 12.00 pct	increase, 12.00 pct	increase, 12.69 pct		increase, 13.14 pct		increase, 13.14 pct	
SECTION C											
	7564.73	1786.24	1339.68	1.00	1.00	5,854,401	201,792	5,652,609	96.55	747.2	3.45
	7257.33	1786.24	1339.68	1.00	1.00	5,854,401	195,397	5,659,004	96.67	779.7	3.33
	6973.93	1786.24	1339.68	1.00	1.00	5,854,401	187,768	5,666,634	96.79	812.5	3.21
	6711.89	1786.24	1339.68	1.00	1.00	5,854,401	180,713	5,673,688	96.91	845.3	3.09
	decrease, 11.27 pct						decrease, 10.44 pct	increase, 0.37 pct		increase, 13.12 pct	

Section A—Maintaining 100,000 cu ft blast air, see Section A, Table I.

Section B—Maintaining blast weight constant, see Section B, Table I.

Section C—Maintaining oxygen content constant, see Section C, Table I.

Column X—quantity of heat (Btu) required per unit weight of burden and time required for completion of processing reactions.

Percentage figures indicate maximum change for range of conditions calculated.

Carbon to CO = 0.75 lb C per lb O_2.

H_2O contents of Sections B and C are held constant at 5 grains H_2O per cu ft air.

mits increase in burden weight proportionate to the quantity of heat conserved in the furnace.

Such increase will not disturb relationship of the optimum stock travel rate to the dominant principle of maintaining equilibrium between divisions of processing. Always, with increase in the ore-to-coke burden ratio, while maintaining the optimum stock travel rate, production of iron will be increased and the fuel rate will be reduced.

References

[1] AISI Year Book, 1904, and "Application of Dry Air in the Manufacture Of Iron" by James Gayley, AIME Transactions, 1905.

[2] "Audit of C, O_2, and H_2 in the Iron Blast Furnace" by J. S. Fulton, December, 1941, Meeting of the Engineering Society of Western Pennsylvania.

Control Keeps Sawblade in Line

A new dynamic control steers bandsaw blades to boost accuracy in cutting tough metals.

Longer blade life is another of many added benefits.

By R. H. Eshelman—
Engineering Editor

▪ Development of the high speed steel band blade made faster band sawing possible. At the same time, it made it harder to hold a consistently straight cut at high feeds and speeds, especially on tough alloys and metals of non-uniform microstructure. Now, however, this problem appears to be solved.

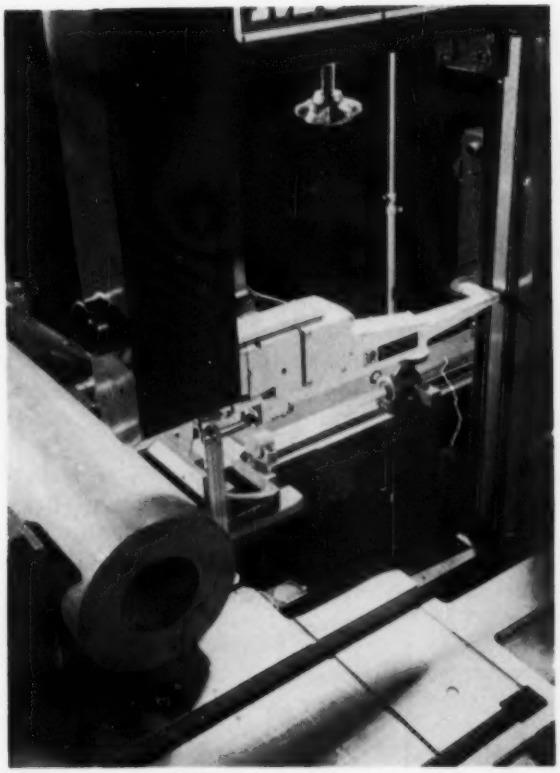
An ingenious accuracy control unit has been developed by Armstrong-Blum Mfg. Co., Chicago, for its new line of heavy duty band sawing machines. Called the Sure-Line, the control assures machine tool accuracy with faster cutting time. Moreover, it doesn't require a large cabinet of electronic equipment.

Proof of the new unit's efficiency and reliability has already been established in numerous plant installations, where it has been used on both continuous production and miscellaneous jobs.

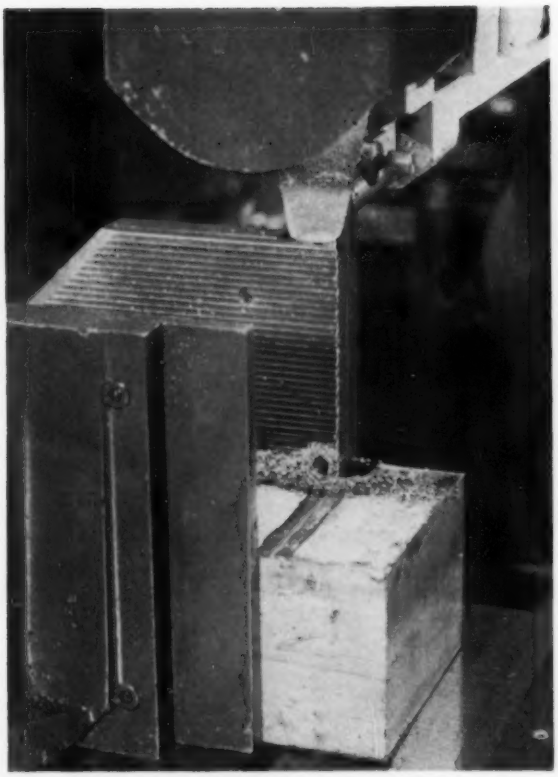
Adds Precision — One major source of error in band sawing has been the unpredictable straying of the blade from a true path. Since the blade must be flexible, the problem is how to hold it on the line of cut. Close spacing of top and bottom blade guides is only a partial answer.

As teeth wear they become unbalanced. Some unavoidable inaccuracies also occur in blade manufacture. Even minor variations in workpiece hardness can cause deviations. Armstrong-Blum sought a way to "steer" the blade that would assure a straight cut and boost blade life as well. Its new control unit caps years of research.

STEERS BLADE: Automatic blade controller guides cut on tool steel stock, 7½ in. OD and 4 in. ID.



FAST REACTION: Guide arms correct blade drift even with blade speed at 165 fpm and 60 lb pressure.



CUTS TO LINE: Controlling unit keeps blade on scribed line of 3x4-in. rectangular block of die steel.

User Reports—A good cross section of experience with the new blade control is offered by Crucible Steel's service center in Chicago. It specializes in special alloy and tool steels.

Manager David Stuart says, "We cut tool steels faster and more accurately with this new saw. The straighter cut saves material, lets us serve specialty steel users better." In sawing blocks and hollow bars of these tough materials, the machine cuts from 3 to 3½ sq. in. per minute, according to supervisor Russell Nielsen. On mild steel like 1045, the rate climbs up to 10 sq. in. per minute.

Cutting accuracy seems to have improved about 50 pct since Crucible started using this high speed, automatic bar-feed saw with the new control device.

How It Works — The automatic blade controller is essentially a sensitive, but simple, electromechanical servomechanism. It continuously senses and automatically corrects any tendency of the blade to deviate from the line of cut. Two carbide-tipped contact points in the sensing element, mounted on the saw's upper guide head, detect any lateral stray.

Thus, any lateral blade movement causes it to contact one of the points. The upper guide arm amplifies this movement mechanically to actuate a precision switch. This energizes a reversing motor that rotates a vertical pinion rod which runs between gear segments on the rear of the upper and lower guide arms.

As the pinion rod rotates, it causes the blade guides to pivot, thus turning the blade back to its original position—literally leading it to cut a straight path.

Broadens Uses—In addition to the new control, the machine is also more versatile than before. Its upright column tilts 45° right or left for angular and miter cuts. Blade feed is always into the material.

Experience with these new features at Crucible and other locations suggest new uses for band sawing, such as: segmenting of large die blocks, cutting double angles on plate stock for jigs and fixtures, splitting clamp rings and bushings, mitering large diameter pipe, and coping and mitering heavy structural shapes.

Pares Cost—Early estimates show that the blade control may boost blade life as much as 50 pct, in addition to lowering piece-part costs and decreasing waste.

Crucible's new saw has an automatic bar feed to simplify set up and unloading. Three hydraulic vises hold the work, and feed indexing is within 0.005 in. length accuracy. The operator can preload work while the saw is cutting. Waste ends can be eliminated with a fourth vise that clamps work on both sides of the blade. The automatic feed is easily disengaged for single cuts.

Unit Spreads Drawing Compound On Heated Magnesium

Designed for high output, it applies an even film of heated lubricant to both sides of the preheated sheet.

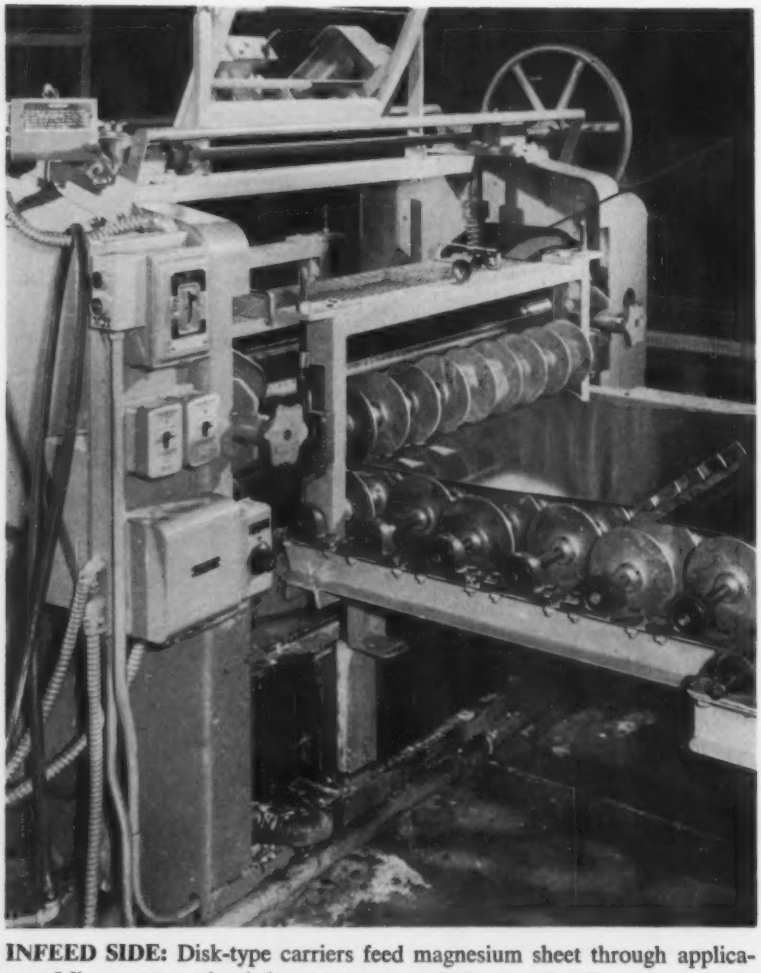
It's coupled with ovens to coat and heat magnesium in a continuous line.

▪ Nearly all press work on magnesium is done at a temperature upwards of 400°F. Sometimes it reaches up to 650° or 700°F, depending on the particular magnesium alloy and severity of forming or drawing. It's important, then, to use a drawing lubricant that stays put and works properly in the presence of heat.

Some of the special compounds available for this purpose today require heating of both the sheets and the lubricant for best results. To speed the application job, a double coating machine has been developed by Black Brothers Co., Mendota, Ill. The unit uses serrated, neoprene-covered rolls to apply a uniform film of drawing compound.

Each of the two compound application rolls is paired with a doctor roll—the latter having horizontal micrometer adjustment to accurately control film thickness.

The crotch between each application roll and its mating doctor roll forms a reservoir for the drawing compound in process of application. Compound is pumped up to the roll reservoir continuously; any excess overflows back to a supply tank. A 12 kw electric immersion heater keeps the compound at 200°F.



INFEED SIDE: Disk-type carriers feed magnesium sheet through applicator. Mirror at top of unit lets operator watch from end of line.

Fits Into line — That the new Black Brothers machine fits smoothly into a production setup is confirmed at Shwayder Brothers, Inc., Denver. Here, magnesium sheets are drawn into shells for Samsonite Silhouette luggage.

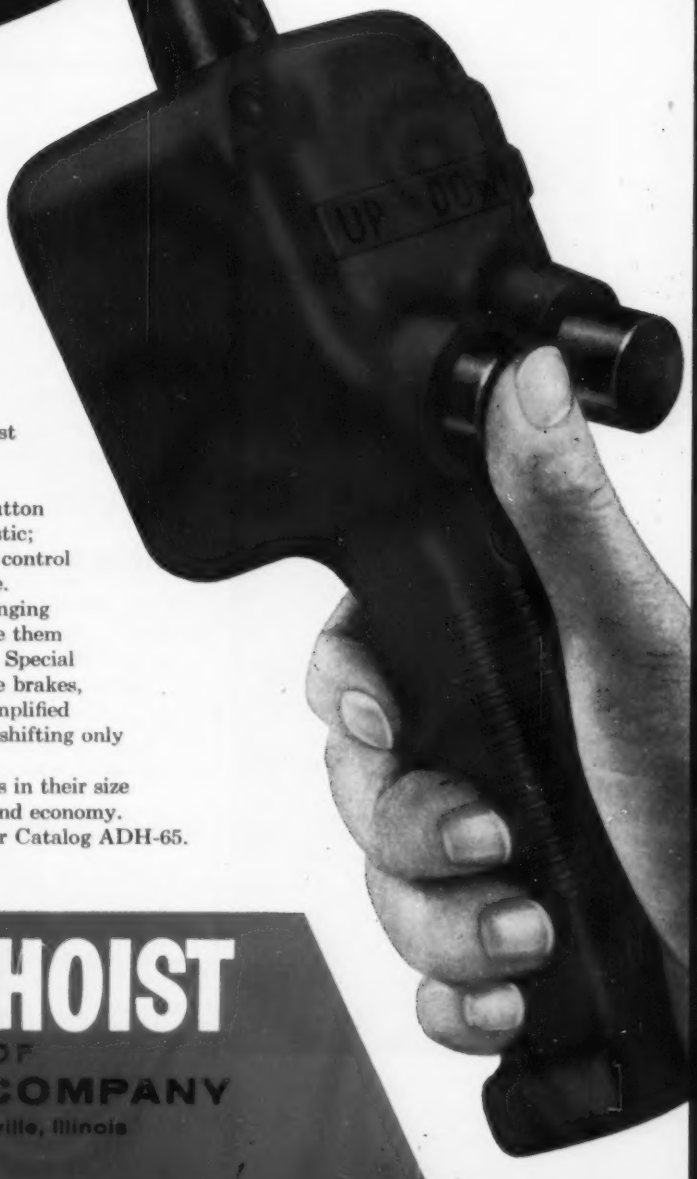
Two conveyorized ovens are coupled with the drawing compound applicator. Sheets are first cut to size on a shear, then fed into the first oven and advanced to the applicator by multiple stainless steel disks. The disk-type conveyors are designed to carry the material through with a minimum of surface contact. No operator is needed directly at the machine where the compound is spread. He simply adjusts the coating machine, then feeds magnesium sheet into the first oven. A mirror atop the applicator helps the operator keep an eye on sheets as they travel through it.

At the far end of the line, sheets automatically drop into a sheet-stacking cart for transfer to two HPM presses. In one shift, the line coats all magnesium sheets needed for 24 hours of draw-press operations.

The New

COFFING Quik Lift

COIL CHAIN ELECTRIC HOIST



"Pistol Grip" push-button station permits easier handling of loads

Without shifting his grip, an operator can depress the up-down buttons of the "Pistol Grip" push-button station and at the same time pull a trolley mounted hoist along the beam to another position—a strain cable is incorporated in the control cord.

Convenience is coupled with safety, since the push-button station is made of non-conducting, impact resistant plastic; the push-buttons are mechanically interlocked; and the control circuit is limited to 115 volts, regardless of hoist voltage.

Coffing Quik-Lift hoists are available in 20 models ranging from ¼ to 2 tons in capacity. Aluminum housings make them lightweight and easily portable, yet strong and durable. Special features include instantaneously releasing magnetic-type brakes, five-pocket load sheaves for reduced chain wear, and simplified wiring systems which permit motor voltage changes by shifting only seven quick connect terminals.

The new Coffing Quik-Lifts are the outstanding hoists in their size range from the standpoints of convenience, durability and economy. For details, consult your Coffing distributor, or write for Catalog ADH-65.

COFFING HOIST

DIVISION OF

DUFF-NORTON COMPANY

814 Walter Street • Danville, Illinois

FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 129.

Speed Reducers

Speed reducers listed in a 4-page folder come with helical or herringbone gears. These units boast an exclusive magnetic oil saver. (Alten Foundry & Machine Works, Inc.)

For free copy circle No. 1 on postcard, p. 129

Straighteners

Straightening presses are pictured and described in an 8-page brochure. Photos show 25 to 200-ton hydraulic models. Other capacities are available. (Williams-White & Co.)

For free copy circle No. 2 on postcard, p. 129

Slotted Angle

New "AIM" slotted angle construction materials are presented in a folder. This slotted angle lets users build shelving, storage units, workbenches, etc. quickly, easily and cheaply. (Acme Steel Co.)

For free copy circle No. 3 on postcard, p. 129

Power Drives

Pointing out how high frequency equipment increases efficiency of high production machinery is a 12-page bulletin. Such machinery, it finds, is often limited by standard 60-cycle power. Drivemotors running at above-line frequencies can be built smaller, lighter and are often cheaper than standard drivemotors, it says. (Louis Allis Co.)

For free copy circle No. 4 on postcard, p. 129

Screws, Nuts

Hardened screws and nuts outlined in an 8-page booklet "deliver millions of tons for pennies in maintenance." It presents an actual application story concerning screw-down screws at Inland Steel Co., which give 11-million tons to the blooming mill setup. (Tool Steel Gear & Pinion Co.)

For free copy circle No. 5 on postcard, p. 129

Screw Threads

Unified and American National screw thread data is available in dozen-page form. (Eastern Machine Screw Corp.)

For free copy circle No. 6 on postcard, p. 129

Blowers

Rotary positive blowers are displayed in an 8-page bulletin. Up-to-date, it includes latest capacities and pressure ratings. (Roots-Connersville Blower).

For free copy circle No. 7 on postcard, p. 129

Air Product Handling

Moving products from place to place via pneumatic systems is discussed in a bulletin. (Sprout, Waldron & Co.)

For free copy circle No. 8 on postcard, p. 129

Punch Presses

Rugged construction lets a 15-ton punch press form and blank at high production rates with precision.

A data sheet explains how such ruggedness means less repairs and maintenance costs. (Kenco Mfg. Co.)

For free copy circle No. 9 on postcard, p. 129

Alloy Steels

"Quick Facts About Alloy Steels" contains nine AISI and SAE tables on openhearth and electric furnace alloy steels—bars, billets, blooms and slabs. Also covered: discussions on grain size, heat treatment, depth hardness. (Bethelehem Steel Co.)

For free copy circle No. 10 on postcard, p. 129

Hydraulic Press

Four new C-frame presses appear in a 12-page catalog: automatic, automatic with electrical controls, automatic with hydraulic interlock, and the same with electrical controls. (Hydraulic Press Mfg. Co.)

For free copy circle No. 11 on postcard, p. 129

Gas Pumps

Rotary positive gas pumps offered in a bulletin come in 18 sizes. Capacities, pressures and drives cover a wide range. (Roots-Connersville Blower).

For free copy circle No. 12 on postcard, p. 129

Bushings

High-precision drill jig bushings are cataloged in new literature. (Standard Bushing Mfrs., Inc.)

For free copy circle No. 13 on postcard, p. 129

Casters

Instead of a king pin, a new caster uses a gyro-action bearing. Even-load distribution resulting lets each caster carry 500-lb loads. (Rapids-Standard Co.)

For free copy circle No. 14 on postcard, p. 129

Power Screwdriver

A power screwdriver outlined in a 6-page folder holds constant torque. It adjusts from 15-in.-lb minimum to 120-in.-lb maximum. Tolerances held are ±2-in.-lb at

FREE LITERATURE

the lower range, ±6 at the higher. It drives any standard machine screw. (Detroit Power Screwdriver Co.)

For free copy circle No. 15 on postcard, p. 129

Job Shop Facilities

"Blue print for Manufacturing in the Space Age" is a 24-page booklet pointing out extensive facilities for handling aircraft and missile subcontracting work. (Twin Coach Co.)

For free copy circle No. 16 on postcard, p. 129

Ductile Iron

Quality ductile iron is discussed in a 6-page folder. Listing each, it reviews these ductile iron qualities: tensile strength, machinability, heat resistance, pressure tightness, impact resistance, rigidity, surface hardness and casting versatility. (Hamilton Foundry & Machine Co.)

For free copy circle No. 17 on postcard, p. 129

Worker Relations

"Check Talks" outlined in a 4-page folder are the pay-check equivalent of chalk talks. They carry employer messages to workers while employees are in a receptive mood. (Personnel Materials Co.)

For free copy circle No. 18 on postcard, p. 129

Thermocouple Wire

Color-coded packages of thermocouple wire covered in a bulletin are dust resistant. Such packages prevent contamination of the platinum, platinum-rhodium wire. (J. Bishop & Co.)

For free copy circle No. 19 on postcard, p. 129

Crane Parts

More than 280 ways to get long crane life are explained in an 8-page booklet. It explains how long-life parts increase crane efficiency. Parts include: axles; gears and pinions; sheave, track and brake wheels. All are of hardened tool steel. (Tool Steel Gear & Pinion Co.)

For free copy circle No. 58 on postcard, p. 129

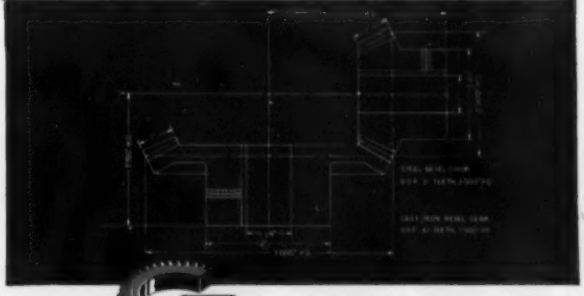
Gregory Grant says —

COMPARE THE COSTS!

BUY GRANT *Customized* GEARS FOR O.E.M. AND SAVE 25%

Here is a typical comparison — 50 sets of gears and pinions to meet assembly specifications:

Set of stock gears unaltered	$20.20	Set of Grant customized gears to your specifications, ready for installation
Rebore shaft hole/per pr.	.80	
Cut keyway/per pr.	.50	
Drill and tap for set screw/per pr.	.40	
	$21.90 pair	$15.75 pair



Yes, you can save 25% in actual costs when you specify Grant customized gears instead of making time-consuming alterations to fit stock gears to your needs. Layout, scheduling and machine time are eliminated, plus hidden costs for paperwork, handling and spoilage.

In addition to cost savings Grant customized gears save you time because they are ready for immediate assembly; rigid inspection prior to shipment makes certain that all gears are uniformly accurate to insure maximum dependability and eliminate rejects.

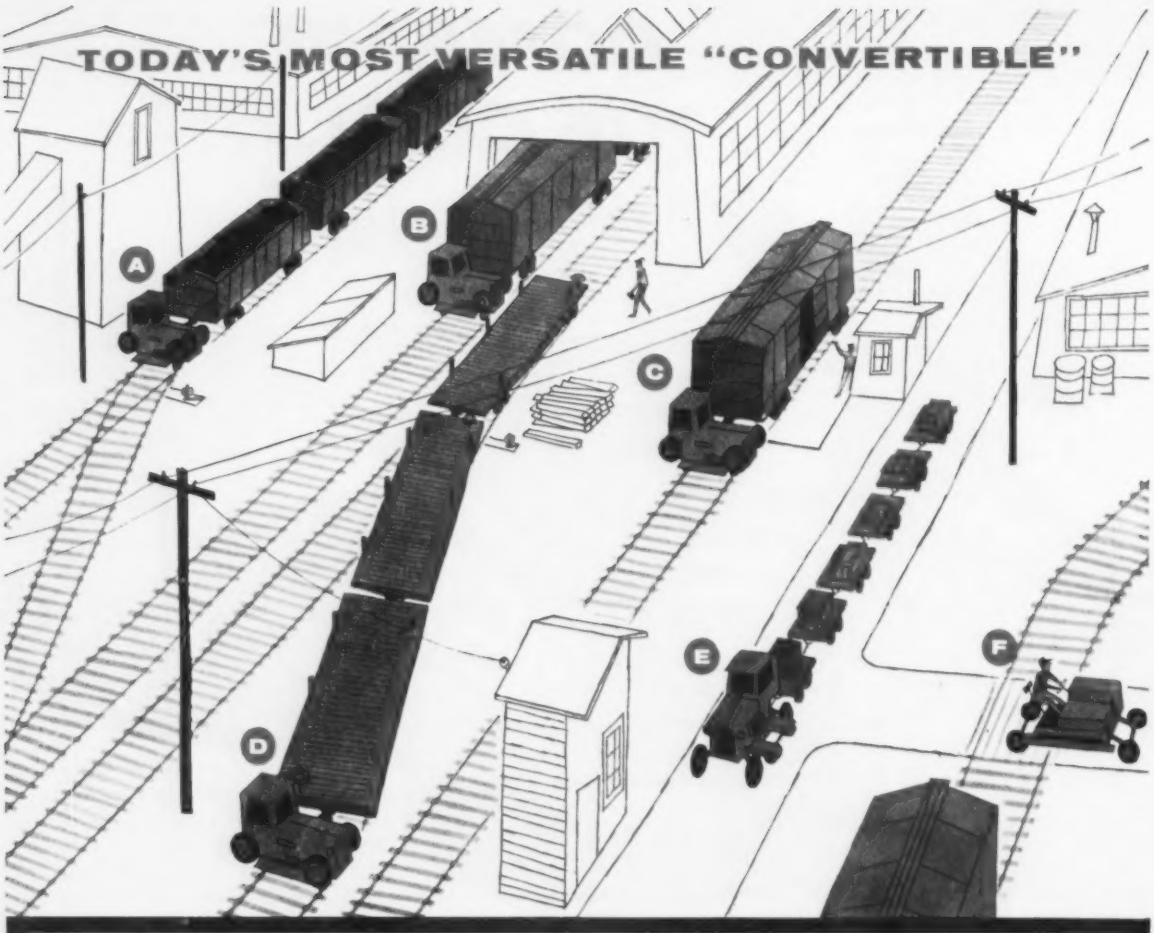
For all original equipment applications, you will be dollars ahead when you specify Grant customized gears. Send us your specifications for an immediate quotation — no obligation of course.

ESTABLISHED IN 1877

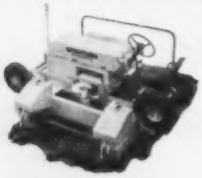
GRANT GEAR WORKS, INC. WEST SECOND STREET, BOSTON 27, MASS.

• *Catalog Available on Customized Gears* • *Precision Gears* • *Speed Reducers*

TODAY'S MOST VERSATILE "CONVERTIBLE"



3 Models to Meet Your Specific Needs



2TM Trackmobile

3TM Trackmobile

5TM Trackmobile

All three models of the Whiting Trackmobile switch, spot and haul freight cars fast and at low cost. Trackmobile converts from road to rail in seconds to facilitate car handling, makes your operation more profitable. Here are just a few of the many ways you might use "Today's Most Versatile Convertible":

- **A** New 5TM torque converter Trackmobile quickly switches fully-loaded coal cars.
- **B** Railroads are big Trackmobile boosters—use them to shuttle cars in and out of repair shop.
- **C** 3TM Trackmobile is on the job rain or shine. Here it spots a freight car with pin-point precision.
- **D** 3TM Trackmobile returns empties or loaded cars to siding, positions cars where they're needed, frees plant from dependence on switch engines.
- **E** No freight cars to move at the moment, so 5TM converts to road wheels to haul carts.
- **F** Trackmobile can travel "cross-country" on rubber tires to where it's needed. Now this 2TM will convert to steel rail wheels in seconds.

SEND FOR TRACKMOBILE FACT FILE—Illustrated folders on all three Trackmobile models. See which one meets your needs best. Whiting Corporation, 15801 Lathrop Avenue, Harvey, Illinois.

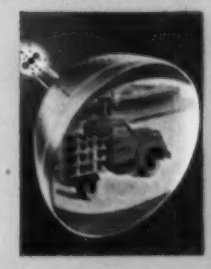
87 OF AMERICA'S "FIRST HUNDRED" CORPORATIONS ARE WHITING CUSTOMERS

WHITING

TRACKMOBILE

MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; FOUNDRY, RAILROAD, AND CHEMICAL PROCESSING EQUIPMENT

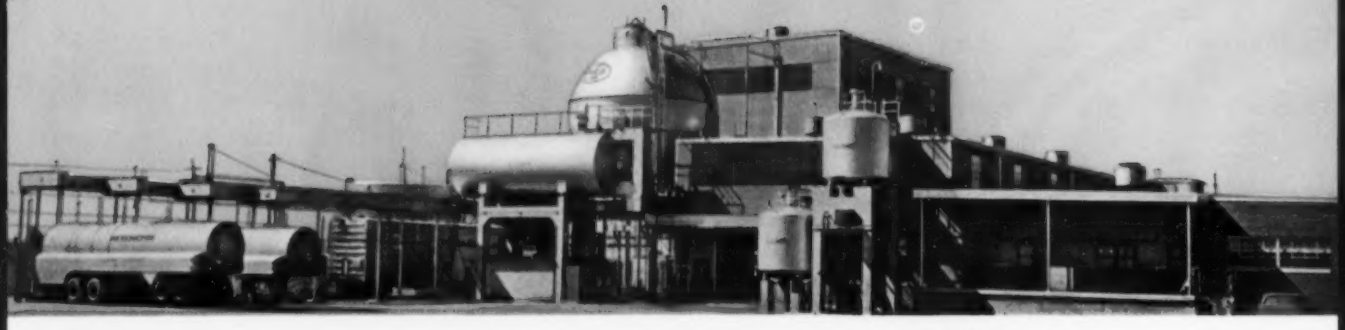
INDUSTRIAL GASES... NATIONWIDE... FROM AIRCO



Air Reduction gases, among them oxygen, nitrogen, argon, hydrogen, helium and carbon dioxide are vital commodities in the metal-working industries.

In other industries, too, Air Reduction gases are playing an important role—food processing, electronics, steel, aircraft and missiles, and chemicals.

To all industries, Air Reduction supplies gases in whatever quantity needed, and in whatever form—gaseous or liquid. (Except hydrogen—available in gaseous form only and helium also available in liquid form currently on West Coast only, elsewhere in gaseous form.) Air Reduction industrial gas specialists, with years of practical experience and technical training, are at your service to help you make the most efficient use of industrial gases. Ask the Airco representative in your vicinity to show you why your gas requirements are best served by Air Reduction.



AIRCO

Offices and dealers in most principal cities

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A division of Air Reduction Company, Incorporated
150 East 42nd Street, New York 17, N. Y.

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Air Reduction Pacific Company
Internationally —
Airco Company International
In Cuba —
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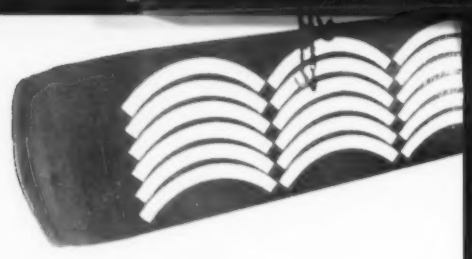
AT THE FRONTIERS OF PROGRESS YOU'LL FIND AN AIR REDUCTION PRODUCT • Products of the divisions of Air Reduction Company, Incorporated, include: **AIRCO** – Industrial gases, welding and cutting equipment • **AIRCO CHEMICAL** – vinyl acetate monomer, vinyl stearate, methyl butynol, methyl pentynol, and other acetylenic chemicals • **PURECO**–carbon dioxide–gaseous, welding grade CO_2, liquid, solid ("DRY-ICE") • **OHIO**–medical gases and hospital equipment • **NATIONAL CARBIDE**–pipeline acetylene and calcium carbide • **COLTON**–polyvinyl acetate, alcohols, and other synthetic resins.



With Airco's Multiple-Torch Flame Cutting Equipment...

MACHINE QUALITY CUTS

Whether it is the warehousing of steel parts for supply to metal-fabricators, or the production of parts by fabricators for assemblies and end products, multiple-torch flame cutting today plays a role of growing importance in modern industry.

"Machine quality" means close-tolerance cuts with equipment such as Air Reduction's Travograph® (shown in action), just one item in Airco's extensive line. It means elimination of plate-edge preparation for close fit-up, reduced handling and reduced labor costs . . .

Quality cuts with Airco machines are obtainable on a wide range of steel thicknesses for an unlimited variety of shapes. For information about the Airco cutting equipment best suited for your job, call your nearest Airco District Office, or write for literature.

AIRCO®

Offices and dealers in most principal cities

AIR REDUCTION SALES COMPANY

A division of Air Reduction Company, Incorporated
150 East 42nd Street, New York 17, N. Y.

On the west coast — Air Reduction Pacific Company

Internationally — Airco Company International

In Cuba — Cuban Air Products Corporation

In Canada — Air Reduction Canada Limited

All divisions or subsidiaries of Air Reduction Company, Inc.

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FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Steel Sections

Special steel sections can save time and money for manufacturers, a folder points out. Using special sections eliminates a great deal of forming, bending, welding, planing, and milling. The folder lists sections available in weights from 1½ to 40 lb per foot, in hot rolled or cold finished steels. (Connors Steel Div., H. K. Porter Co., Inc.)

For free copy circle No. 20 on postcard

Tool Steel

For tool and die shops, a new flat ground, oil hardening, tool steel is ground 0.014 to 0.016-in. oversize on thickness. It has a tungsten and high chromium content. Literature gives details. (Latrobe Steel Co.)

For free copy circle No. 21 on postcard

Brazing Alloy

Properties of a new nickel-base brazing alloy for high-temperature service are reviewed in a data sheet. (Wall Colmonoy Corp.)

For free copy circle No. 22 on postcard

Motor Starting

Starting of synchronous motors is discussed in a 10-page bulletin. It describes ways of starting various types. (General Electric Co.)

For free copy circle No. 23 on postcard

Metal Cleaning

How to quickly analyze and compare metal cleaning costs is explained in a booklet. By considering standard cost factors in the booklet, you can figure total hourly cleaning costs rapidly. With reasonable accuracy you can insert basic operating information into simple formulas for the answers. (E. I. du Pont de Nemours & Co.)

For free copy circle No. 24 on postcard

Tooling System

Originators of a steel rule—die economy tooling system have just published a 16-page booklet. It shows typical stampings made with these tools. Some 150 manufacturers use such tooling in their own shops under a licensing agreement. It also tells how low-cost stamped parts can be ordered. (Templet Industries, Inc.)

For free copy circle No. 25 on postcard

Weight Dial

Visual weight indicators outlined in a brochure are for use where printed weights aren't required. It gives data on an 18 in. visual dial which can be remotely located. A visual numerical indicator for desk use or rack panel mounting is also covered. (Streeter-Amet Co.)

For free copy circle No. 26 on postcard

Plastic Tanks

Standard tanks presented in a data sheet come in branch and linear polyethylene and polypropylene. (American Agile Corp.)

For free copy circle No. 27 on postcard

Small Tubing

A 16-page catalog contains information on types, grades, lengths, finishes and general characteristics of small diameter stainless steel, nickel and nickel alloy tubing, glass-to-metal sealing alloys, super and precipitation hardening alloys and fabricated tubular parts. (J. Bishop & Co.)

For free copy circle No. 28 on postcard

Fluid Drives

Dry fluid drives and couplings are outlined in a 24-page bulletin. It covers 10 stock couplings and 8 stock drives, ranging from fractional

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 11/6/58

Circle numbers for Free Technical Literature or Information on New Equipment:

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FIRST CLASS PERMIT No. 36 New York, N. Y.

BUSINESS REPLY CARD
No postage necessary if mailed in the United States

POSTAGE WILL BE PAID BY

THE IRON AGE
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Village Station
NEW YORK 14, N. Y.

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No postage necessary if mailed in the United States

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NEW YORK 14, N. Y.

FIRST CLASS PERMIT No. 36 New York, N. Y.

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FREE LITERATURE

to 1000 hp. Operating advantages include: use of smaller motors to start heavy inertia loads; protection of motors and driven machinery against damage due to overload; low current draw at start; smoother starts, and absence of slip at normal running speeds. (Dodge Mfg. Co.)

For free copy circle No. 29 on postcard

Oscillograph

Complete with built-in amplifiers, an oscillograph package is offered in a 4-page bulletin. New and portable, this two-channel unit handles jobs often considered impractical for direct writing recording. Its recorder needs no added equipment. Pushbuttons select four chart speeds. (Brush Instruments).

For free copy circle No. 30 on postcard

Steel Tubing

Hydraulic cylinder makers and designers may be interested in a technical folder. Its six pages explain how use of smooth inner diameter welded carbon steel tubing cuts time and costs for cylinder makers. (Tubular Products Div., Babcock & Wilcox Co.)

For free copy circle No. 31 on postcard

Basic Switches

Significant innovations in basic switches appear in a 32-page catalog. Among new switches it introduces are: a high-precision roller lever switch, an adjustable actuator switch, and a "pulse" switch. (Micro Switch Div., Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 32 on postcard

Pusher Furnaces

Simplicity, ease of operation and versatility are key features of pusher furnaces outlined in a bulletin. Using ceramic heating elements, these furnaces work up to 2400°F. They have wide use in: bright treating stainless, nicro-brazing, sintering metal powder parts, copper brazing, heat treating moly and tungsten high-speed steels, air hardening high-carbon and high-chrome steels, and ceramic metallizing. (C. I. Hayes, Inc.)

For free copy circle No. 33 on postcard

Thread-roll Dies

Aircraft-quality thread-roll dies, for making fine or coarse external screw threads, are reviewed in a 4-page bulletin. Dies come in all standard thread sizes from No. 10-32 to 1-in-14. (Standard Pressed Steel Co.)

For free copy circle No. 34 on postcard

Corrosion

A 17-page technical study about salt water corrosion has been compiled. It describes wrought iron's 73-year service in San Francisco Bay. Corrosion rates of iron and steel are analyzed. (A. M. Byers Co.)

For free copy circle No. 35 on postcard

Blast Finishing

Precision finishing by the wet blasting method is the subject of a new bulletin. (Techline Div., Wheelabrator Corp.)

For free copy circle No. 36 on postcard

Abrasive Cutter

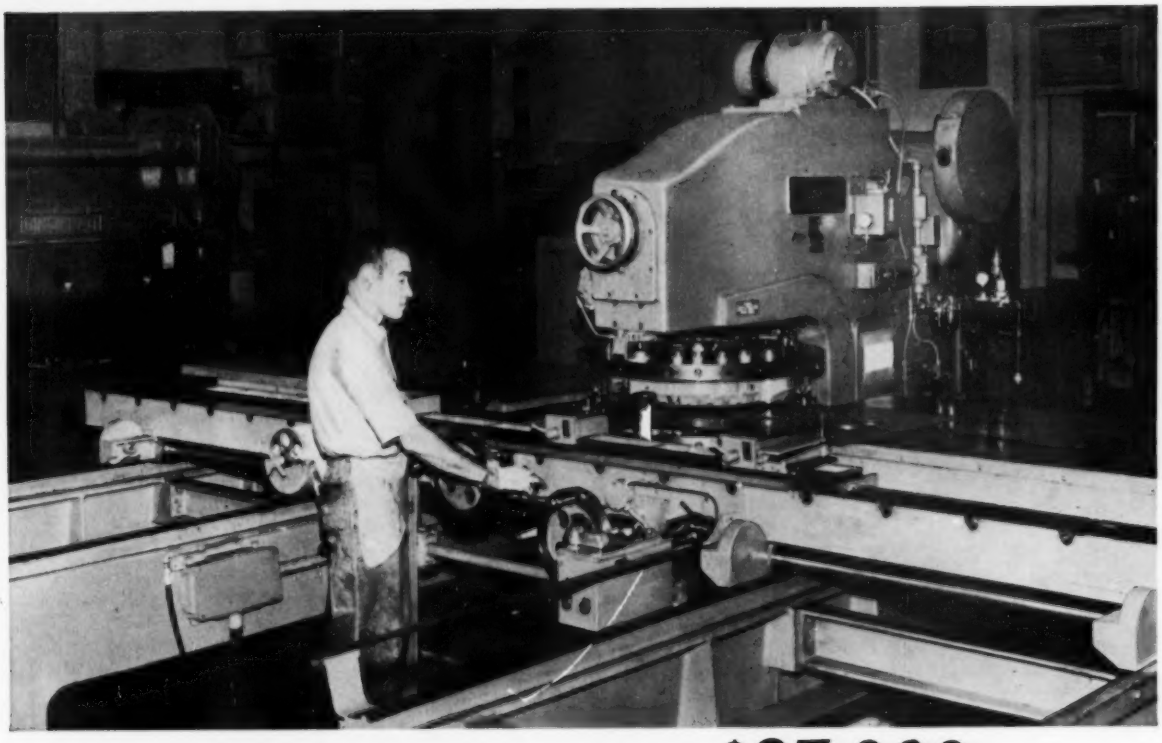
Describing an abrasive cutting machine is a 4-page folder. This unit cuts practically all metals: solids to 2-in. square, pipe and tubing to 3½-in. OD, angle iron to 3 x 3 in., channels to 4 in. (Allison-Campbell Div., American Chain & Cable Co.)

For free copy circle No. 37 on postcard

Heat-resist Chain

Chain providing to 33⅓ pct more heat transfer surface than normally expected is introduced in a bulletin. It shows how the chain can reduce your operating costs, provide extra metal where needed, reduce points of wear, and simplify sizing of chain. It comes in ready-to-install lengths. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 38 on postcard



One WIEDEMANN Saves Over $27,000 a Year for Reliance Electric

. . . and equally startling savings of from 60% to 90% are reported by users of Wiedemann Turret Punch Presses throughout industry.

With the Wiedemann Method, parts are completely pierced as needed—costly inventory is reduced. Layout, nibbling, drilling and other hand operations are eliminated. Engineering time is minimized, and changes can be made at low cost.

If you are producing openings of any size or shape in sheet metal or plate, it will pay you to get the facts about the Wiedemann Method.

Send for the full story on how this Wiedemann paid for itself in less than two years at Reliance Electric, and a copy of Bulletin 301.

Here's what Reliance Electric & Engineering Co., Cleveland saves on producing control panels for electronic and magnetic systems:

57% in direct labor on "Control Panel" production.

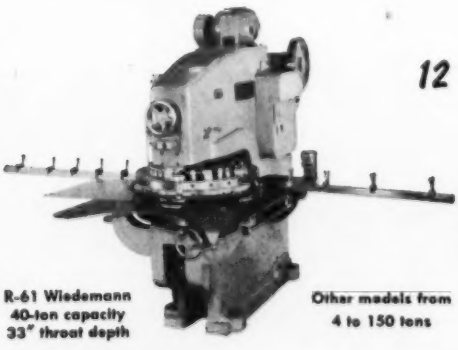
78% in direct labor on "Operator Panel" production.

26% in cost of parts previously purchased.

1008 hours per year of engineering time spent specifying and modifying stock panels.

276 hours a year in recording inventories and added rate setting.

SIMILAR SAVINGS CAN BE YOURS



R-61 Wiedemann 40-ton capacity 33" throat depth

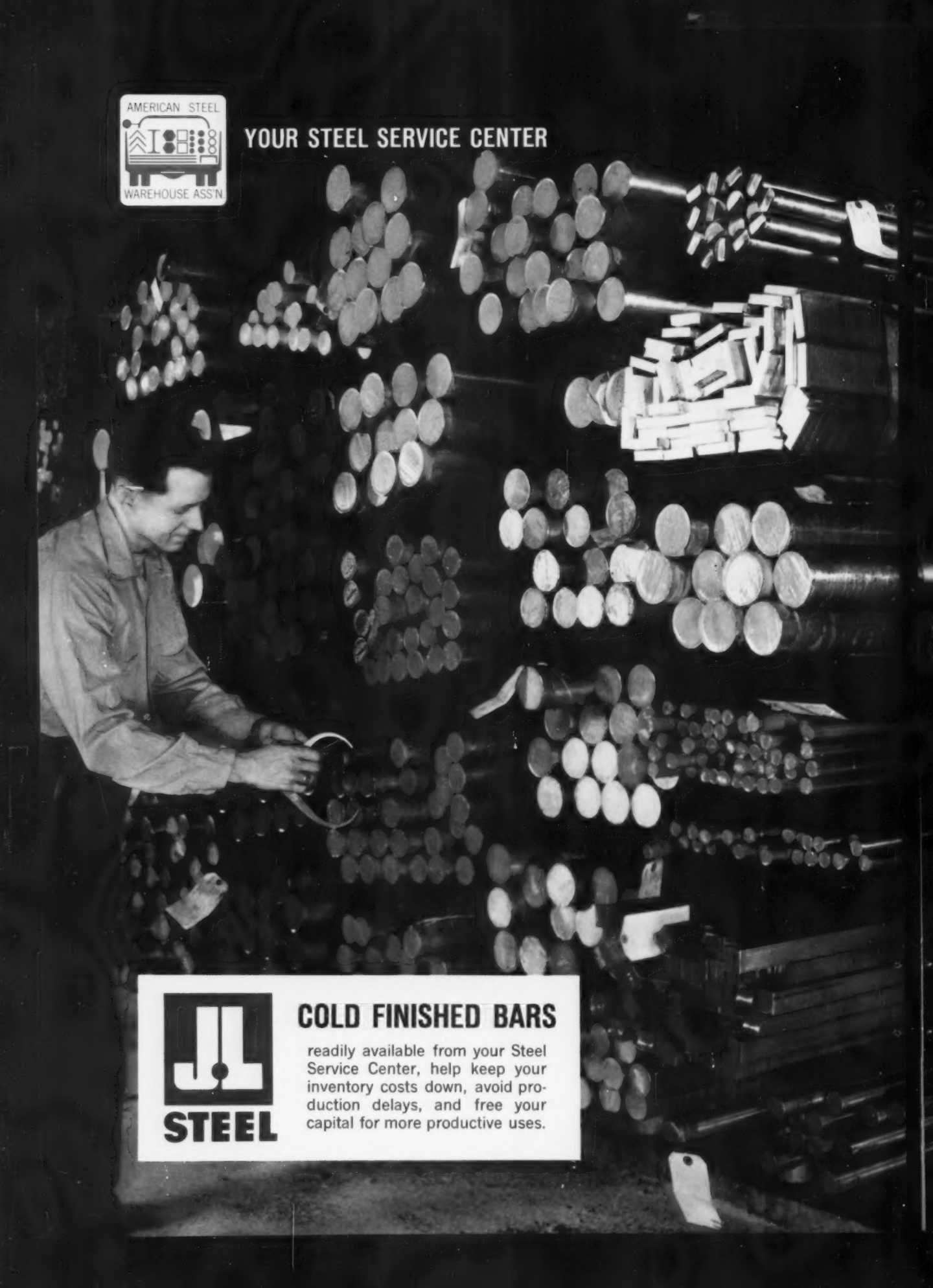
Other models from 4 to 150 tons

12 to 32 Punches and Dies Ready for Use

WIEDEMANN MACHINE COMPANY

TURRET PUNCH PRESSES

DEPT. IA-11 • GULPH ROAD • KING OF PRUSSIA, PA.


AMERICAN STEEL
WAREHOUSE ASS'N
YOUR STEEL SERVICE CENTER
JL
STEEL
COLD FINISHED BARS
readily available from your Steel Service Center, help keep your inventory costs down, avoid production delays, and free your capital for more productive uses.

Have you learned the BIG LESSON from the recent recession?

It's expensive to tie up capital and space in steel stocks! When orders fall off, your cost of ownership—interest, space rental, maintenance, and insurance—continues.

This kind of expense for cold finished bars can be eliminated—or at least reduced substantially—by taking *planned* advantage of the services of your local Steel Service Center, your nearest distributor stocking steel products.

Virtually every steel buyer thinks of his Steel Service Center in an emergency—and this is fine. But even bigger returns may be realized by taking *planned* advantage of your Steel Service Center for your routine purchases.

Your distributor of cold finished bars has a wide variety of shapes, grades and sizes available for prompt delivery, and specialized cut-to-order service takes only a little longer. Plan to use *his* space for your steel stocks, *his* capital for inventory, *his* equipment, and *his* prompt cut-to-order service—and production coordinated deliveries—for higher productive efficiency. Many others already do—American Steel Warehouse Association figures reveal that over 14 million tons of steel were handled in this manner in 1957.

Steel Service Centers are a vital segment of America's steel distribution system, and the distributor nearest you stocking cold finished bars can help you reduce the cost of your steel ownership. Call in his representative and get the full story on taking *planned* advantage of the services of his firm and its facilities. And ask him to show you the new ASWA slide film presentation, "George Wilkins Fights Back"; you'll find it both interesting and rewarding.

Jones & Laughlin Steel Corporation, Dept. 562, Three Gateway Center, Pittsburgh 30, Pennsylvania.

MATERIALS HANDLING EQUIPMENT is expensive—as is the skilled labor to operate it—but you can reduce these costs by taking planned advantage of the services and facilities of your nearest distributor of J&L cold finished bars.

EXACTING QUALITY CONTROL MEASURES assure superior finish, machinability, and uniformity in J&L's cold finished bars. Ask your salesman to show you samples of J&L's improved Bright-Drawn finish, the "new look" in cold drawn bars.

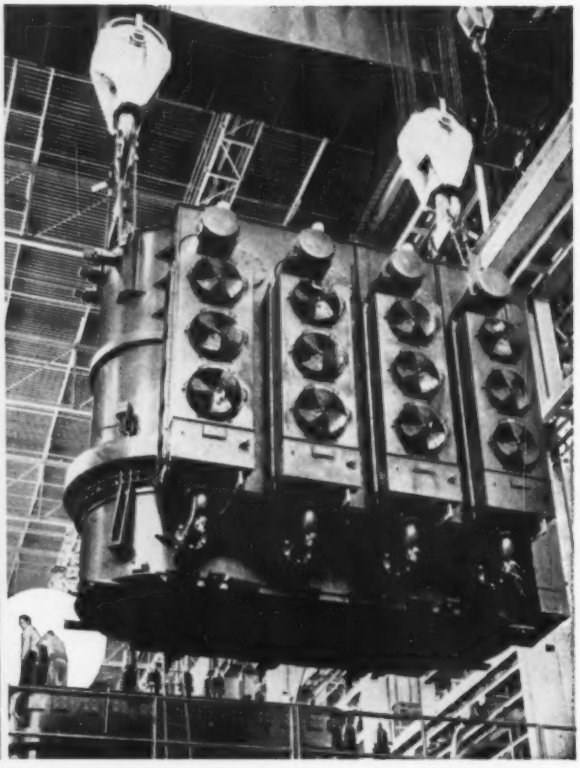
Jones & Laughlin Steel Corporation

STEEL

PITTSBURGH, PENNSYLVANIA

ACCO for Better Values

Acco Registered® Slings–Chain or Wire Rope



Why different loads require different slings

Your rigger knows that different loads need different slings because of varying factors such as shape, weight, material, finish, protruding sharp corners, extremes of temperature.

On some jobs chain is best. On others the characteristics of wire rope make it the first choice. On still other jobs, wise riggers know that combinations of chain and wire rope will provide the greatest lifting economy.

No matter what type is called for, you can be sure of the safest slings and the best values in ACCO *Registered* Slings. From this one source you can get unbiased information based on actual know-how.

And you can get the exact slings your rigger should have.

One of the recent improvements is the new shaped Master Link now provided without extra cost on all ACCO *Registered* Slings, chain or wire rope. This link gives 18% greater resistance to distortion with no increase in weight. It is another reason why ACCO *Registered* Slings are recognized as the standard of efficiency and safety.

All ACCO *Registered* Slings are proof-tested, registered and identified for your greater assurance of safety.

• • •

Tell your distributor you'd prefer ACCO *Registered* Slings.

WHAT "ACCO REGISTERED" MEANS

1. The best material
2. Unit safety factor (on bodies, rings, links, hooks)
3. Proof test of complete sling to twice the working load limit
4. Actual field service test of each design
5. Metal identification ring or tag on each sling
6. Signed Registry Certificate with each sling

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Atlanta, Boston, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, Portland, Ore., San Francisco, Wilkes-Barre, Pa., York, Pa.
In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

Production Forming Uses Explosives

Production automation is coming to a method once thought best for low output.

A new automatic setup will bring metal blanks and dies to a water-filled pit. Here, an explosion will shape the metal.

▪ Forming metal shapes by setting off high explosives inside them has moved a step further. A major missile components fabricator has announced it's planning a production explosive forming facility. When complete it will place this method in the realm of more conventional methods.

Currently being planned by North American Aviation, Inc., Columbus, Ohio, the production setup will make use of a technique developed by the firm originally to make aircraft wing-tip fuel tanks for the Navy. It makes use of controlled explosive force to push metal against a containing die of the desired shape.

Follows Experiments—Adoption of explosive forming to make the large tanks followed extensive experiments and tool design. Of two main sections, each tank is about 12-ft long.

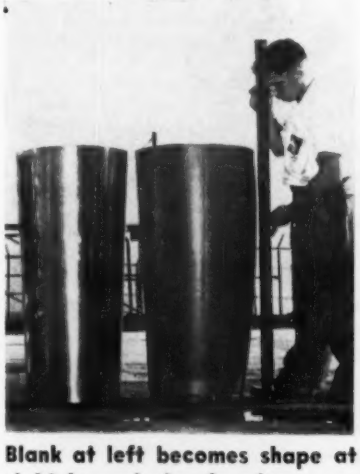
Die designs and "shooting" techniques are now good enough to production make parts by the method, the company feels.

In forming the tank, a cone-shaped sheet of metal about 1/16-in. thick is placed inside the die. This cone is cut off at one end.

Fills Die With Water — After placing the cone in the die, the die fills with water. A vacuum results between the cone and the sides of the die after pumps remove air.

A high explosive is fired inside the cone. Water inside acts as both a force conductor and shock dampener. The finished tank section takes the shape of the prescribed curved moldline.

Finds Other Uses — Explosive forming has other uses too. One is swaging tubing around plug-end fixtures. This application is an example of compressive or "implosive" effect; the tube is formed into the groove of the plug to which it must be attached.



Blank at left becomes shape at right in explosive forming.

Forming with explosives instead of with conventional heavy ma-

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chines simplifies the production of certain aircraft components.

When the future production explosive forming facility goes into actual use at North American, parts and dies will be wheeled down inclined rails into a water-filled pit. The forming charge will automatically fire when the tool and part are in position.

Machining

Simplified coolant controls aid precision machinists

Simplified coolant control with a new type water soluble cutting-grinding compound helps a precision-parts maker meet close tolerance demands.

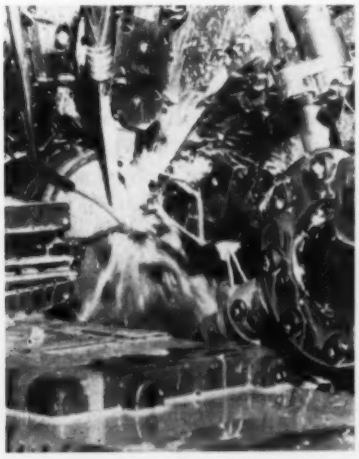
When different compounds are used with various machining operations, there's some chance of using the wrong compound. This can happen where a machine handles steel one day, aluminum the next. Sometimes, workers intermix coolants; so at times it may be impossible to know the exact coolant that's in a particular machine.

With this in mind, Bell & Howell, precision camera-parts maker, became dissatisfied with the use of several specialized compounds. It started searching for a single material that would satisfactorily handle its diverse operations of cutting steel, aluminum and stainless steel at its Lincolnwood, Ill., plant.

Search Pays Off—The manufacturer found that with Vantrol 255, a product of Van Straaten Chemical Co., Chicago, it could simplify its coolant control. One coolant now serves all cutting operations. In addition, it eliminates rancidity and gummy deposits on machines. This had been caused by some special coolants previously used.

The new compound has universal application, too. It's now used in various diversified operations. Therefore, it replaces different specialized water soluble compounds with one product.

"Gummed Up" The Works—The gummy deposits caused improper indexing and sluggish operation on the plant's new high speed, high precision, Swiss automatic "Tarex" machines. Because the company believes in maintaining an immaculately clean plant, much time was lost in cleaning machines. Frequent cleanout meant high maintenance



This coolant doesn't gum up; so machine cleaning is easier.

cost, both to keep machines charged with proper coolants and to eliminate rancidity.

In order to obtain satisfactory finish and adequate tool life it had been necessary to use heavily fatted, extreme pressure water soluble compounds on some of the operations. These left gummy deposits on operating parts; they also tended to increase coolant spoilage.

Not Only Worries—Even worse, on some high speed operations, the compounds failed to provide adequate cooling. Operations would run hot. On close tolerance operations this increases size control problems. To overcome these worries, it was necessary to shift to a synthetic type on some jobs.

However, after some research, the firm came up with a product which combines lubrication values of the fatty water soluble compounds with cleaning and heat exchange qualities of the synthetic compounds. Rancidity has practically ceased and coolant life extends beyond the four months

guarantee of its producer. Gummy deposits are nil and machines now run clean and smooth.

Testing

Unique water table solves duct design problems

A unique "water table" test lets designers study effects of duct arrangements on air flow patterns within electric precipitators.

Efficiency of its giant dust collectors, states Buell Engineering Co., Inc., is affected by gas flow. Hence, it's desirable to design ductwork, vanes and baffles for uniform distribution and minimum turbulence.

No Two Are Alike—Each installation is different. Ducts leading to and from the collector meet particular space situations. Seldom are any two alike.

The New York firm first began using its water table system to improve collectors in the field. Success of the system soon led to adaptation for design purposes. Now all preliminary ductwork design is tested on the water table before final design work is undertaken.

Welding

Keeping work hot puts welder in "ring of fire"

When a welder recently joined 3-in. thick chrome-moly steel center hubs to 24, 60-in. diam chrome-moly steel gas turbine cylinders, he worked almost in a "ring of fire."

Each of the 4850-lb cylinders (with 3-in. sidewalls) was mounted on a rotating table in an almost horizontal position at R. C. Mahon Co., Detroit. The work required preheating and holding of 450°F during welding to avoid stress cracks. Hence, it was almost surrounded by flames.

This welder must work almost in a circle of flames.

Hoods Hold Heat—Piping was arranged for a mixture of natural gas and air. Sheet metal hoods helped retain the heat as welding progressed.

Rods used were of the 90-16 low hydrogen class. After welding, work was stress relieved, then final machined, with warpage and shrinkage controlled to within 1/16-in. limits. (Continued on page 143.)

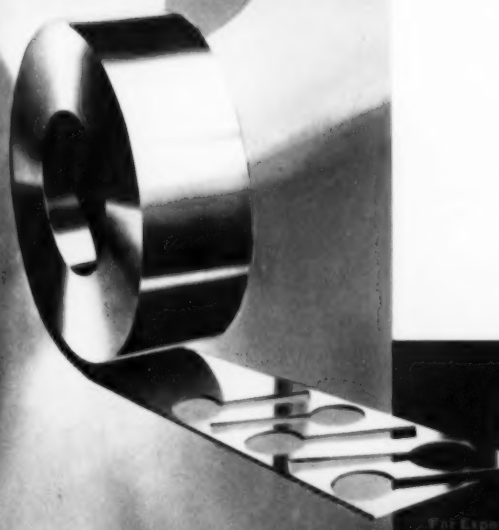
Legendary Beauty

with the carefree luster and practicality of solid

Superior Stainless

STRIP STEELS

With fine American-made flatware made of Superior Stainless Strip Steel, you enjoy the soft highlights and satin-smooth finish that are traditional in finest table services . . . plus the hard, tough, mar-resistant strength of quality stainless steel, good for generations of everyday use! Superior Stainless meets the standards of America's foremost tableware fabricators. *Let us check with you on your own special needs.*



Superior Steel

DIVISION OF

COPPERWELD STEEL COMPANY

CARNEGIE, PENNSYLVANIA

For Export: Copperweld Steel International Company, New York

The stainless steel flatware illustrated is produced by ONEIDA, LTD., Oneida, New York

New Comfort Seal on AO STRAIGHTAWAY SOUND PROTECTORS

There are no costly replacements due to puncture or cracking of ear seals when you muffle plant noise with the AO 372-8A! New extended, extremely soft vinyl ear seal maintains same exceptional attenuation as previous 372 Series — conforms completely to temples of glasses and is very comfortable — even in cold temperatures. Cold will not crack muff.

The overall rugged construction prevents vibration of protector while in use. Results in superior performance. THESE ARE THE REASONS WHY MOST AIRCRAFT MANUFACTURERS USE THE AO STRAIGHTAWAY — why this muff is the most widely accepted. Write for literature containing attenuation charts or call your nearest American Optical Safety Products Representative.

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The end-user can hardly be expected to know a great deal about Roebling helical spring wire, border and brace wire, zigzag and no-sag wire, wire for automatic machines, lacing wire...

Thus, the qualities of uniformity, temper, tensile strength, size and finish that are yours whenever you use Roebling Spring Wire mean long life, resiliency under constant use (and abuse) where it counts the most...to those who buy Roebling Upholstery Spring Wire after you do.

For further information on the wide range of types, the consistent superiority and availability of these and other Roebling wire products, write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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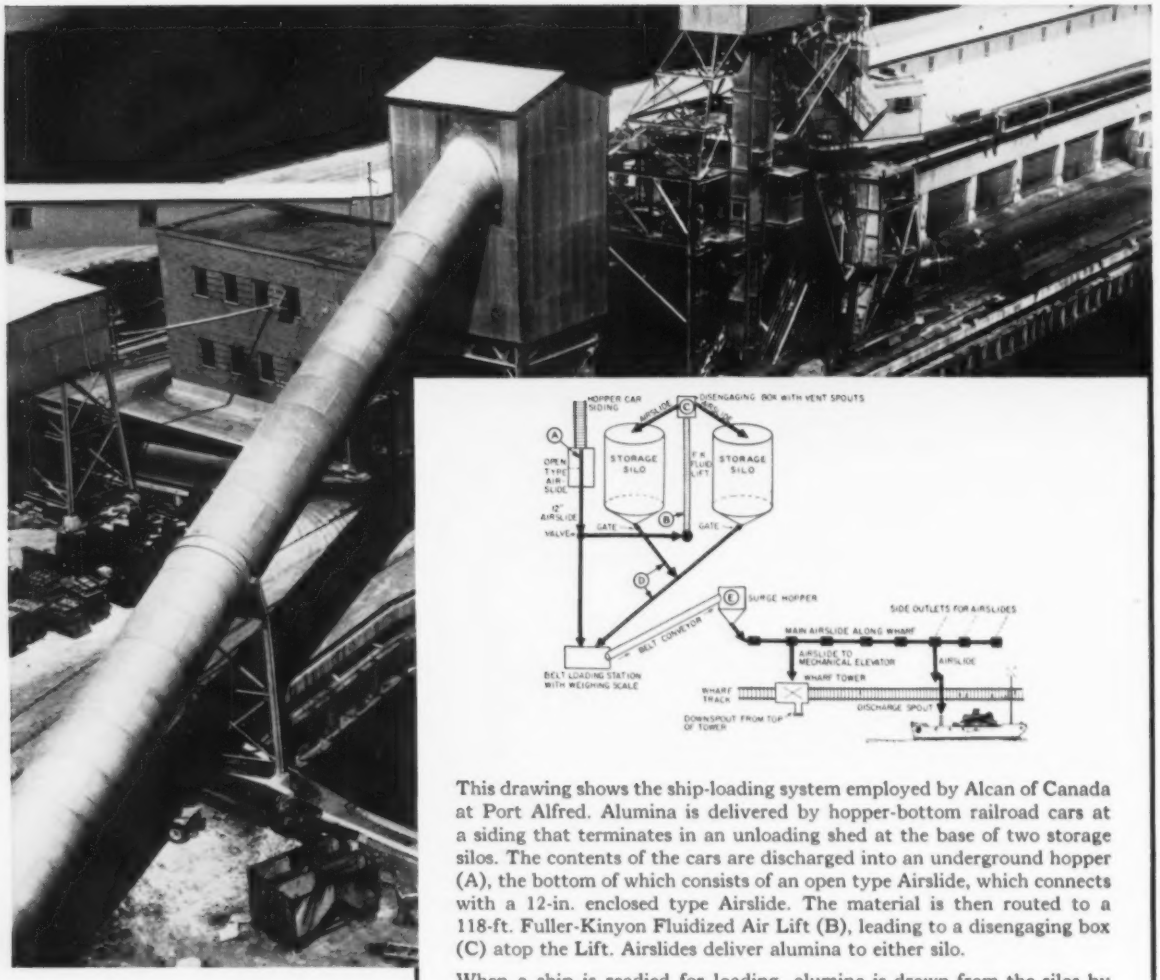

This drawing shows the ship-loading system employed by Alcan of Canada at Port Alfred. Alumina is delivered by hopper-bottom railroad cars at a siding that terminates in an unloading shed at the base of two storage silos. The contents of the cars are discharged into an underground hopper (A), the bottom of which consists of an open type Airslide, which connects with a 12-in. enclosed type Airslide. The material is then routed to a 118-ft. Fuller-Kinyon Fluidized Air Lift (B), leading to a disengaging box (C) atop the Lift. Airslides deliver alumina to either silo.

When a ship is readied for loading, alumina is drawn from the silos by open type Airslides and transported by means of 16-inch Airslides (D) to a belt, which delivers to a surge hopper (E) feeding the 400-ft. long Airslide for conveying to the ship. Air for the operation of the Fuller-Kinyon Fluid Lift is supplied by a Fuller Rotary Compressor.

Here's how ALCAN reduces ship loading time 50%

. . . FULLER SYSTEM PAID FOR ITSELF IN WEEKS

Expansion of The Aluminum Company of Canada's pneumatic conveying system at Port Alfred, Quebec, has cut ship loading time of alumina by 50 percent.

Engineered and built by Fuller, this pneumatic conveying system has eliminated frequent interruptions in the loading schedule and made possible big savings in handling cost. The initial cost of the installation was absorbed within the first few weeks of operation!

Additional equipment consists of two 35-ft. portable F-H Airslides® operating in tandem off of a main 19-in. Airslide running a distance of 400 feet along the roof of the wharf.

These Airslides discharge the alumina directly into the hold of the ship, eliminating the time-consuming shutdown during relocation of the bucket elevator and tower for delivery to various holds.

This carefully planned system points out how Fuller's more than 30 years of specialized experience in engineering and manufacturing pneumatic materials-handling equipment helped another company save time and money. We would like to put our facilities to work for you, too. Write, giving us details of your operations.

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Steelmaking

Giant cupola serves new O_2 steelmaking process

One of the world's largest, a mammouth 50½-ton cupola, has just been installed at Acme Steel Co.'s new $23-million oxygen converter steel-making plant at River-

Switcher maneuvers the giant cupola on a flat railcar.

dale, Illinois. Designed by the Whiting Corp., Harvey, Ill., the cupola provides hot metal for the new low-cost steelmaking installation. This produces steel by blowing pure oxygen against molten pig iron and scrap.

Casting

Continuous casting improves brass, copper billets

A copper and brass producer has just put into operation new semi-continuous casting equipment. This turns out both extrusion billets and rolling mill slabs.

Set up at Ansonia Div., American Brass Co., its users report it produces better quality metal than conventional individual mold casting methods previously used.

How It Works — The casting setup comprises a series of casting machines designed by Lobeck Casting Processes Inc., New York. Each feeds on liquid metal from Ajax elecric induction furnaces. Liquid

metal flows from the furnace along a launder to a distributor; this insures smooth, splash-free entry of metal into the molds.

Metal cools rapidly in passing through the water-jacketed "bottomless" molds. It's solid by the time it leaves them.

Molds continuously fill with molten metal, matching the withdrawal of solidified castings until ingots have been cast to desired length.

Make 8-in. Diam Billets — The machines produce multiple-strand exrusion billets to 8-in. diam, rolling mill slabs to 6 x 24½-in. lengths to 12 ft.

Each station's hydraulic power unit carefully controls casting speed and the stroke length of the hydraulic ram.

One operator runs each machine. A helper assists when casting starts

Operator watches as the setup continuously casts slab.

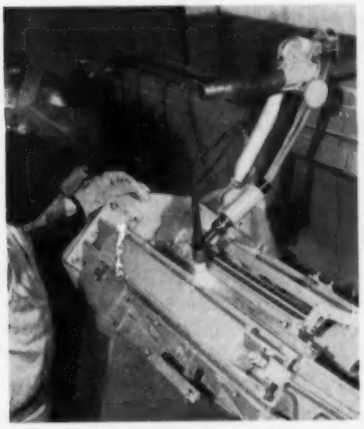
and at final billet removing by overhead crane.

In addition to common copper-base alloys such as gilding metal, commercial bronze, red brass, low brass, cartridge brass and yellow brass, the setup produces alloys like leaded brasses, aluminum bronzes and copper-silicon alloys.

Welding

Photostat Corp., Rochester, N. Y., has cut production time in making its "Photostat" machines. This is done by mounting a Linde Co.

manual Heliarc HW-10 torch on an Oxweld CM-30 carriage for mechanized welding of type 316 stainless steel tanks.



Carriage (upper right) mechanizes this manual welding torch.

Two end plates are aligned and joined to the tank body by four 22-ipm longitudinal welds. The 0.064-in. overlap of the plates to the tank body is used as filler metal to fuse the 0.031-in. plates with the tank.

Handling

Truck reaches for loads, saves storage space

Like to add more stock in your warehouse or storage area? But fear that it will make your aisles too narrow to accommodate your materials handlers? If so, maybe a new truck is your answer.

Like a human being, this truck reaches out for its load, swinging in unison, right or left of center up to 30°.

Has 60° Swing—This gives forks a 60° radius, eliminating need for truck positioning in narrow aisles. The operator makes necessary adjustments merely by moving the forks to the right or left. This speeds up handling. Compactness and over-all height of the mechanism allows greater use of storage space as well as higher stacking of loads.

The truck attains a lift of 130 in. from a collapsed mast height of 83 in.

Automatic Transportation Co., Chicago, is its designer and manufacturer.

Al Alloy Has Weld Strength

New aluminum alloys display good weldability and strength in the welded condition.

Fabricators can use inert gas welding, arc cutting or resistance welding with them.

▪ Aluminum-magnesium alloys in a new series boast weldability and strength in the welded condition. Moreover, inert gas welding, arc cutting and resistance welding methods can be used on the alloys, almost like they're used on low carbon steel.

Extensive research on the alloys in the welded condition by Aluminum Co. of America, indicates that mechanical characteristics, such as static tensile properties, fatigue properties, creep and stress rupture properties, improve with higher magnesium content.

Welder uses inert gas shielded method on 2-in. thick Al plate.

Some Get Worst—On the other hand fabricating characteristics, bending, forming and drawing, worsen as magnesium content increases. Temperature is a factor in corrosion control, too.

Alcoa has developed a full line of such alloys, called its 5000 series. Alloy 5456, for instance, has high-strength in welded structures. But where high temperatures are involved, Alcoa recommends 5454.

Also expanded is its line of welding rods for the series. Welding electrode alloys 5556 and 5554 were developed for the new mill shape alloys.

Big Sizes Ready—Alcoa is offering the series in large sizes, made possible by larger presses and mills recently installed. Most popular mill items are sheet, plate and extrusions.

Sheet and plate can be ordered to 144-in. wide. These permit use of large, one-piece heads, reducing the amount of welding in fabrication.

Big and sturdy, this truck is fabricated of Alloy 5454.

A 14,000-ton press recently in-

stalled at Alcoa's Lafayette, Ind., plant turns out aluminum-magnesium extrusions. This boosts the general weight limit per extrusion to 2500 lb; weight-per-foot limit is 22.7 lb. Cross sectional areas to 19 sq in are now available, with the maximum circumscribing circle 23 in.

Metal Powder

Ferrous-base powdered metal bearing is economical

A new economical powder metal bearing consists chiefly of iron powders.

According to its developer, Amplex Div., Chrysler Corp., Detroit, the general-purpose sleeve bearing "is more economical than porous bronze, and is not dependent upon strategic copper." "This new bearing," it adds, "will help restore shrinking profit margins for many companies in the original equipment market." The company points out it has slashed 4 to 1 the cost of constituent materials.

Withstand Tests — Subject to tests under actual operating conditions, the ferrous-base bearings demonstrate advantages on a wide range of products where corrosion isn't a problem and where mechanical strength requirements are within tolerable limits.

A high oil content, approximately 20 pct, makes it self-lubricating for the lifetime of many end products. It withstands relatively high temperatures over extended periods.

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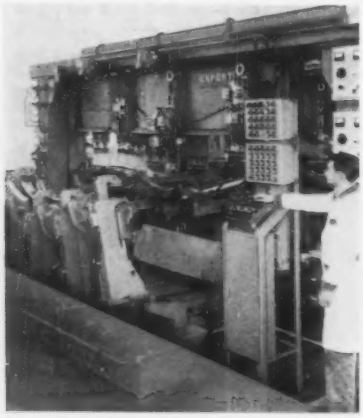
New Production Ideas

Equipment, Methods and Services



Magnetic Tape Gives Orders to Welding System

Taking orders from magnetic tape, a new welding setup joins parts having untrimmed, out-of-tolerance, straight line or contour edges. And it does this in a continuous, automated welding action. The system controls powered welding heads which automatically follow any type welding contour with a high degree of accuracy. The basic welding head carriage follows the proposed design contour of the part welding line. A mechanical probe follows the actual weld contour line. Movement of slides transmit to a control which figures the error between the actual and the design weld line. This error records on magnetic tape. A reading head a few inches behind picks this up, sending a correction through to the welding carriage. Magnetic tape can be used over and over. (Expert Welding Machine Co.)

For more data circle No. 39 on postcard, p. 129

Hand Stamps Clearly Mark Hardened Steel

Stamping up to 50 Rockwell C or 500 Brinnell hardness materials is possible with new hand stamps. Used in the same manner as conventional hand stamps, these long-life tools will mark steel mill rolls, bolt headers, spike header dies, forging dies, plastics molding dies, etc. Actual field tests show the hand stamps are not only simple to use, but provide cheaper, faster marking than slow, more complex methods. It brings the long-recognized advantages of softer metal stamping methods into the realm of metals up to 50 Rockwell C hardness. Like stamps for marking softer materials, stamps come for marking special contours, radii or shapes, with letters, figures and symbols. (Quality Die Co.)

For more data circle No. 40 on postcard, p. 129

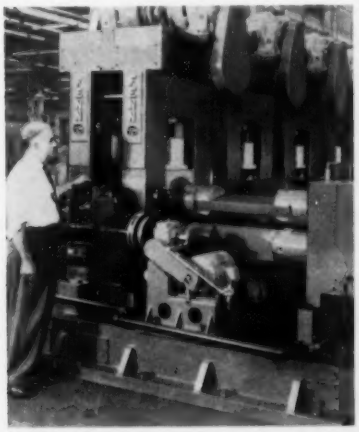
Precision Driller Meets Patternmakers Needs

Developed especially to meet needs of patternmakers and model shops is this versatile, precision drilling machine. It features an extra large, plain surfaced, tilt-top table; deep spindle nose to table capacity; heavy duty spindle and quill; and a wide speed range. The table measures 40-in. wide x 23-in. deep. It tilts to 45° on either side. The smooth top aids work handling during planing or milling operations. It raises or lowers via a convenient hand crank with 29-in. maximum spindle nose to table distance (larger capacity available). Space between spindle and column is 13 in.; this permits working to the center of pieces up to 26-in. wide. Spindle and quill of rugged heavy-duty construction have combination radial-thrust bearings to take the side thrust associated with routing, planing and milling operations. A sensitive hand lever feed gives precise control of feed and depth. (Leland-Gifford Co.)

For more data circle No. 41 on postcard, p. 129

Strip Mills

Three large tandem strip mills for a single installation consist of: (1) a four-stand, two-high tandem mill with 12-in. diam rolls; (2) two two-stand, four-high mills with 3¼-in. diam workrolls and 12-in. diam backup rolls, work roll driven.



Each stand has separate direct-current drive and high-powered dual motor screwdowns. They feature automatic lubricating and internal roll cooling systems. These are supplied from tanks self-contained within the heavy stress relieved welded steel beds. (Fenn Mfg. Co.)

For more data circle No. 42 on postcard, p. 129

Stock Supports

New adjustable metal stands support strip stock at any height or angle as it feeds to a stamping machine. Stands adjust from 28- to 42-in. high. They incline to any desired angle. Brackets on the stand hold a wood tray. Two stands support about 1000 lb. They may be used also in portable conveyor systems, and as supports for tables or benches. (Stamping Specialty Co., Inc.)

For more data circle No. 43 on postcard, p. 129

Rolling-mill Motors

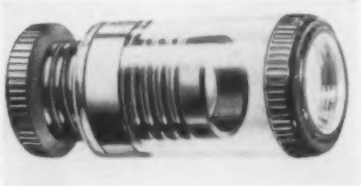
New standard metal rolling mill motors are now available. These are designed to meet requirements of modern mill practice. The direct-current drive motors contribute to decreased downtime by: (1) making things easier for maintenance men;

(2) giving better dependability. One 9-ft diam rotor incorporates a large number of design features of the new standard dc metal rolling mill motors. It's force ventilated in both 40°C and 50°C ratings. Insulation is Class-B throughout. This rotor is for a new 7000-hp, twin-drive unit which is just one of the new line of motors. The entire line includes a complete re-design of standard motors. Changes are based on a thorough review of modern mill drive requirements. Some 40 special design, performance and maintenance improvements are incorporated into the main drive motors. (General Electric Co.)

For more data circle No. 44 on postcard, p. 129

Comparator

Gaging and measurement of small parts and objects can be done with this optical, magnifying comparator. It performs at low cost some functions of elaborate projection-type optical comparators. Needing no additional light source, the magnifier compares the part under inspection with a transparent, dimensional-scale pattern. It



instantly reveals plus or minus measurement. The comparator checks radii, angles, chamfers, threads, small holes, lineal, radial and tangent dimensions, odd shapes. (Finescale Co.)

For more data circle No. 45 on postcard, p. 129

Vacuum Furnace

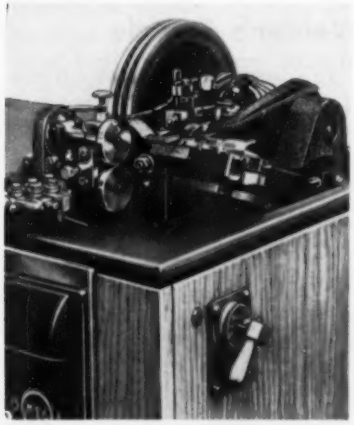
Sintering of powder metal parts compacted of materials with a very high melting point, such as tantalum, is handled by a new vacuum furnace. This cold-wall heat-treat unit also degasses components such as tungsten elements for electronic tubes, which require equally high temperatures. Designed to operate up to 2200°C, the furnace suits experimental work or small-scale production. Compact, it's approximately desk-top height, 5-ft 4-in. long, 4½-ft wide. The vacuum retort is 20-in. diam, 20-in. deep; hot zone is 3½-in. diam, 6½-in. deep, produced by a resistance heated radiant cylinder. This hot zone is surrounded by a multi-layer reflective shield. This, in turn, is surrounded by a water-jacket. (F. J. Stokes Corp.)

For more data circle No. 46 on postcard, p. 129

Cold-header

Cold-heading miniature parts, this fast, accurate machine turns out electrical contacts, rivets, pins, etc. Parts down to 0.012-in. diam by 0.016-in. long can be produced on it. A standard solid die, double stroke heading unit, it cuts to

length, heads, and forms between 80 and 120 pieces per minute. All are to extremely close tolerances. Maximum wire diameter accommodated is 0.070 in. with most



alloys, to 0.120 in. with soft aluminum. Part lengths can range from 0.016 to 0.400 in. Hollowing of rivets and heading can be done in one operation. Hole depth, depending on material being used, is equal to three times the wire diameter in

aluminum and 1½ times in copper and brass. (Robert E. Morris Co.)
For more data circle No. 47 on postcard, p. 129

Welder's Goggle

This welder's goggle has a frame of soft, durable, flame-resistant vinyl plastic. Extremely lightweight, it conforms to contours of the wearer's face. The eyepiece adapter is

a more rigid plastic. This permits raising of both eyepieces as a unit without disturbing prescription glasses which might be worn underneath. (Air Reduction Co., Inc.)
For more data circle No. 48 on postcard, p. 129

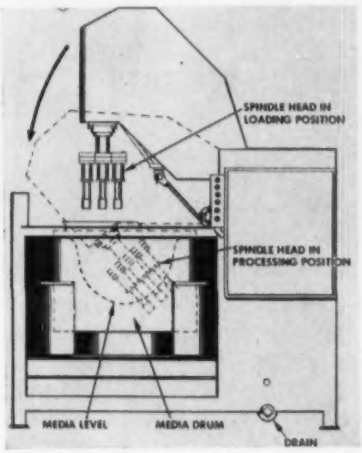
Machine Control

With a new electro-mechanical system, operators can "dial" changes in machine set-up. Not only does it apply to machine tools, but also to conveyor systems and a variety of other work positioning devices which benefit by remote dial control. The pre-selector system drastically reduces machine set-up time, and is, therefore, particularly valuable for short-run production operations. Essentially, the system functions by amplifying electrical signals and moving workpiece to any "pre-selected" position indicated on the dials. If a new work position "set-up" is desired, it is only necessary to change dial readings. (Seneca Falls Machine Co.)
For more data circle No. 49 on postcard, p. 129

Mechanical Finisher

This new type mechanical finishing machine vertically injects parts to be finished into a rotating mass of abrasive media. So effective is it that many metal parts can be

finished in 10 seconds time. It can be used on any metal or alloy requiring rapid, low cost surface processing. It produces extremely uniform results, tests show. It performs deburring, radius forming, removal or blending of machining or grinding marks, or improvement of microinch finish. Users can maintain part dimensions to extremely close tolerances, says the manu-

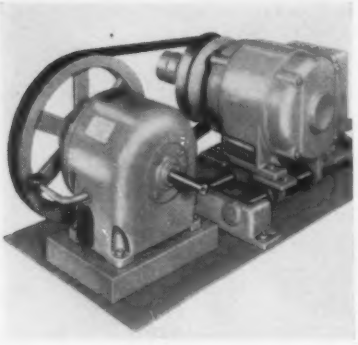


facturer. The finisher consists basically of a rugged frame and housing which supports a motor driven media tub and a pneumatically activated fixture holding spindle. The rotating tub holds abrasive media which produces the surface finish action. Flexibility of operation is maintained through variable speed electric motor driver for both the media tub and the fixture spindle unit. (Abrado Finish Corp.)

For more data circle No. 50 on postcard, p. 129

Variable Drive

Powered by a standard 1800-rpm electric motor, a new variable speed drive is available in ½, ¾, 1, 1½, 2, 3, 5 and 7½ hp ratings. A self-adjusting variable pitch pulley is on the motor shaft, belted to a companion pulley on the four-speed transmission input shaft. The new drive assembly comes in several different motor and transmission combinations. These provide speed variations from 12:1 to as high as 25.7:1. Maximum output speed occurs when the motor moves to the driven machine on turning of a handwheel on the adjustable

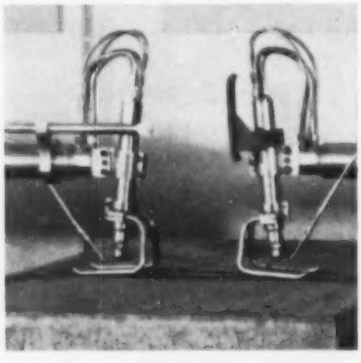


motor base and allowing the "V" belt to run at the largest diameter of the variable pitch pulley. In this position, the gearshift drive is in 1 to 1 ratio. (Lima Electric Motor Co.)

For more data circle No. 51 on postcard, p. 129

Flame Cutters

Bloom, slab and billet cutting machines are now available for cutting workpieces over 932°F. They slice through stock up to 48-in. wide, 2 to 35-in. thick. Customized to meet your own requirements, they come in two basic models. Each standard unit adapts to a mill's specific requirements. Length of arm, height of torch and other elements can be readily changed to personalize each machine, make it suitable for any mill



condition. All units are ruggedly engineered for repetitive cropping and cutting to length of blooms, bars, slabs, ingots, sheet billets and forgings in hot and cold condition. All feature lifetime, error-proof construction. Built of heavy castings and weldment, they withstand heavy loads and hard usage. (Messer Cutting Machines, Inc.)

For more data circle No. 52 on postcard, p. 129

Safety Swivel Hook

Positive locking on a new safety swivel hook eliminates human error. A load cannot be lifted without the gate or yoke automatically

locking. To open, you must manually press the hook against a compression spring. The yoke or gate is made of manganese bronze

alloy (110,000 psi). Smooth design allows full throat opening and also keeps the hook from catching on projections or ledges. (Newco Mfg. Co.)

For more data circle No. 53 on postcard, p. 129

Checks To Millionths

Checking clearances between ID and OD of mating parts to millionths is possible with a three-station comparator just introduced. It's a combination of two standard gaging units (one ID, one OD) plus a computing circuit. In operation,

output of the ID and OD units feeds into a multifunction computing relay; clearance or interference between the two parts reads on the clearance indicator in the center of the gage. Action of the indicators is fast; dials are large; So readings are obtained quickly and clearly. (Pratt & Whitney Co.)

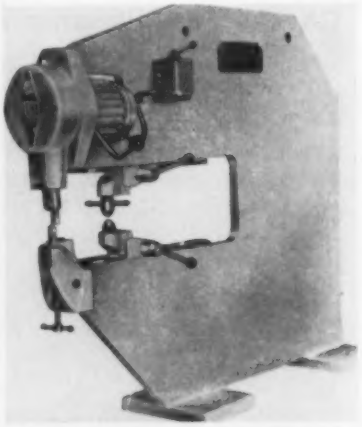
For more data circle No. 54 on postcard, p. 129

Forming Shears

Two new models of one firm's shearing and forming machines have just been unveiled. One is especially designed for small sheet metal shops. It works light materials. Like bigger models, it has quick locking attachments, a totally enclosed mechanism, is fan cooled with ball bearing motors. It features a full complement of tools. The other machine has an edge cutting capacity of 13/32-in. mild steel. It features a heavy duty, pneumatic circle cutting attachment and a quick locking straight cutting attachment. It automatically raises

NEW EQUIPMENT

and lowers its upper tool. This lets the operator use both hands for inserting material. The machine can be run at 350 to 1800 strokes per

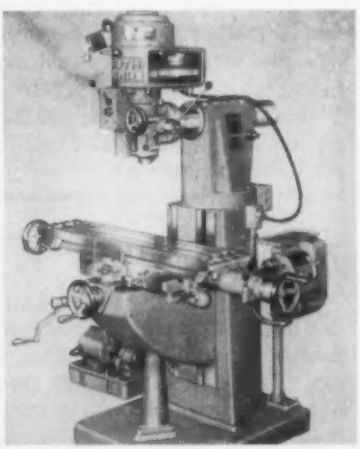


minute. Ten different stroke lengths range from 0.001 to 0.375 in. (American Pullmax Co., Inc.)

For more data circle No. 55 on postcard, p. 129

Milling Machine

Power feeds have been added to the table and quill of one maker's vertical milling machine. These power feeds increase efficiency and



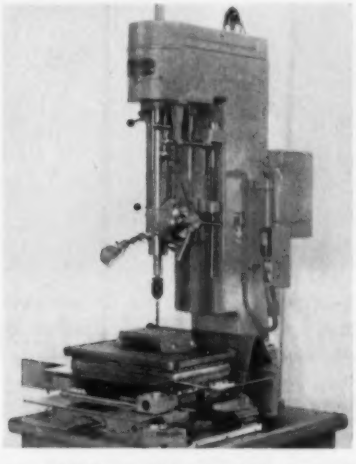
operational ease of the precision machine tool. Spindle power feed is via a hydraulically operated mechanism. This has an infinitely variable feed range from 0 to 25 ipm. A new rapid traverse control positions the quill at relatively high speeds, too. Power longitudinal table feeds are via an indpendent motor drive and lever-operated

quick change mechanism. This connects to the table through telescoping feed shafts. The quick change selective feed mechanism provides 30 table feeds from ¼ to 15 ipm. (South Bend Lathe.)

For more data circle No. 56 on postcard, p. 129

Layout Machine

Layout operations are performed economically with this machine. It does such layout jobs as center drilling, drilling and reaming in parts which do not require jib boring tolerances (i.e., drill jig bushing plates and templates). It can free jig borers for work requiring closer tolerances. This machine accepts several makes of compound tables. It can be supplied with economical simple hand operated screw type tables, or time saving semi-automatic tables using gage blocks or spacer bars, as well as tables automatically programmed by tape or card. The machine has a heavy, rigid, well ribbed base and table of fabricated construction with a coolant trough for use as needed. A removable riser block between the base and the upper machine column allows modifications in working spindle height to accommodate different layout tables that can be used. The machine's rated capacity is 1-in. cast iron, ⅞-in. mild steel. Spindle speeds with a 900-rpm motor are variable from 340 to 2700 rpm in direct drive, 85 to 675 rpm in back gear drive. (Edlund Machinery Co.)



For more data circle No. 57 on postcard, p. 129

No matter what you make from cold rolled steel

An ALAN WOOD Representative can help!

Designed for the golfer who likes to goof . . . off. But before you produce the "Golf-Master", you had better find out about cold rolled steel from your A.W. Representative. He is the man to see in every case! Your A.W. Representative may order a metallurgical study of your problems and bring about savings that build new profits and greater potential. He can provide you with the latest information on cold rolled steel and its application, plus experienced advice on the gauge, size and type to order. Call him today. Your A.W. Representative is always available . . . never out of touch with your location.

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"Swede" pig iron

STEEL PRODUCTS
Plates (sheared)
A.W. Dynalloy (high strength steel)
Hot rolled sheets
Hot rolled strip
Cold rolled sheets
Cold rolled strip

ROLLED STEEL FLOOR PLATE
A.W. ALGRIP abrasive
A.W. SUPER-DIAMOND pattern

COAL CHEMICALS

A.W. CUT NAILS
Standard & Hardened

MINE PRODUCTS
Iron ore concentrates
Iron powder
Crushed stone
Sand

COKE
Foundry, industrial & metallurgical

PENCO METAL PRODUCTS DIVISION
Steel cabinets, lockers & shelving

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The Iron Age Summary

"Big Push" Could be Shaping Up

Market is floundering around at the moment, but it could move to higher ground.

Lag in demand for heavy steel products is offsetting strength in lighter shapes.

■ The steel market floundered around in a "no-man's land" this week, but a "big push" into higher ground could be in the making. The market trend is still up despite some weak spots and the after-effects of scattered automotive strikes.

Here's how the market looks this week:

(1) **Scattered auto strikes,** which have about run their course, have sapped some of the strength in sheet, strip, and hot-rolled bars. Demand for these products is still good, due to an upsurge in appliances, farm equipment, and some inventory building. But deliveries to some auto plants have been set back by several weeks, and part of this loss will not be picked up until later in the year.

(2) **Lagging demand for heavy steel products —** plate, structurals and large-diameter pipe—is offsetting the improved market for lighter products, such as sheet and strip. No great improvement in demand for heavy products is expected until next year.

(3) **Some auto firms will be making up for lost ground in the weeks ahead.** Demand for new cars has been encouraging. Some dealers are clamoring for deliveries to take care of orders on the books. Manufacturers will be under pressure to step up output. This combination could make December one of the best months of the year for steel.

Looking Ahead — Auto firms are beginning to worry about availability of steel for next summer, according to Detroit sources. They're asking steel companies for advice on when they should start hedge buying against the possibility of a steel strike. One steel executive said: "I tell them to start in the first quarter. We'll worry about the second quarter when it comes 'round."

Incoming orders during October ran 5 to 10 pct ahead of September's, depending on geographical area and company. The pickup in sheet and strip orders during the last week was "substantial."

November Looks Good — With some firms, steel shipments are running behind new orders, and there is some chance this situation will hold true for the next two-to-three weeks. It now looks as though November will be a prime month, a little better than the "moderate" level some steel men had been expecting.

There is still a chance of a seasonal drop in the market a few weeks before Christmas. But if the new cars go over big, any thought of a tapering off will be put aside. Detroit still hasn't all the answers, but preliminary reports from dealers are all to the good. In many cases, sales are running well ahead of last year.

Steel Output, Operating Rates

Production	This Week	Last Week	Month Ago	Year Ago
(Net tons, 000 omitted)	2,025	2,025	1,944	1,997
Ingot Index				
(1947-1949=100)	126.0	126.0	120.9	124.3
Operating Rates				
Chicago	85.0	88.0*	85.5	78.5
Pittsburgh	69.0	69.5*	66.0	81.0
Philadelphia	70.0	74.0	76.5	87.0
Valley	63.0	63.5*	54.0	64.0
West	81.5	79.5*	69.0	80.0
Cleveland	73.0	80.0*	74.0	85.0
Buffalo	76.0	78.0	66.0	99.0
Detroit	78.0	81.0*	75.0	92.0
South	60.0	63.5*	66.0	67.0
South Ohio River	83.0	82.0*	73.0	83.0
Upper Ohio River	86.5	90.0*	83.5	74.5
St. Louis	94.0	96.0*	83.0	91.0
Aggregate	75.0	75.0	72.0	78.0

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41*	$66.42
Scrap, No. 1 hvy (Gross ton)	$42.83	$42.50	$42.83	$33.33
No. 2 bundles	$29.50	$28.83	$28.83	$25.00
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	29.00	29.00	26.50	27.00
Lead, St. Louis	12.80	12.80	11.80	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	97.75	97.375	96.75	89.625
Zinc, E. St. Louis	11.00	11.00	10.50	10.00

Shop Equipment Stresses Styling

Shop equipment makers are dressing up their products, making them both more functional and more attractive.

There's a growing trend to greater use of color.

▪ Anyone who hasn't bought shop equipment in the last decade is in for a surprise.

The items on the list of equipment are basically the same. But in actual appearance they bear little resemblance to their antecedents. Shop equipment is being dressed up.

Reasons Why — There are a number of factors behind this trend. For one, industry is paying more attention to the intangibles: A man working in a pleasant atmosphere tires less rapidly, is happier, and more productive.

Secondly, many companies are trying for more efficient operations by laying out their shops for a minimum of handling. In many cases this calls for custom equipment. Makers having to redesign a piece for its functional qualities are going ahead and dressing up its appearance as well. Many custom pieces work so well they are incorporated into the standard line.

Industry's splurge for prestige buildings also helps. Many companies want their new buildings to be architectural landmarks. To follow through with the pleasing exteriors they want more attractive shop equipment.

More Color Interest—The trend can be pretty well charted by the demand for color. A major manufacturer, Columbia-Hallowell Div., Standard Pressed Steel Corp., Jenkintown, Pa., says interest in color is up 10 pct in the last year. In addition to its pleasing appearance and psychological effect, color is also used for coding purposes.

Functional aspects being stressed by the industry are mobility and flexibility. Shelving, for instance, is designed for erection and easy alteration with a minimum of time and tools. For flexibility, makers are taking a page from office equipment makers' book and leaning toward modular design. Several tops and accessories can be hung on the same basic pedestal.

Deliveries Good — The market still favors buyers. Many manufacturers are coming out of the recession stronger than they went in. Columbia-Hallowell, for instance, used the slow period to build extensive inventories and to add equipment.

And more equipment makers now have design and engineering staffs to advise the customer on the most efficient shop layout.

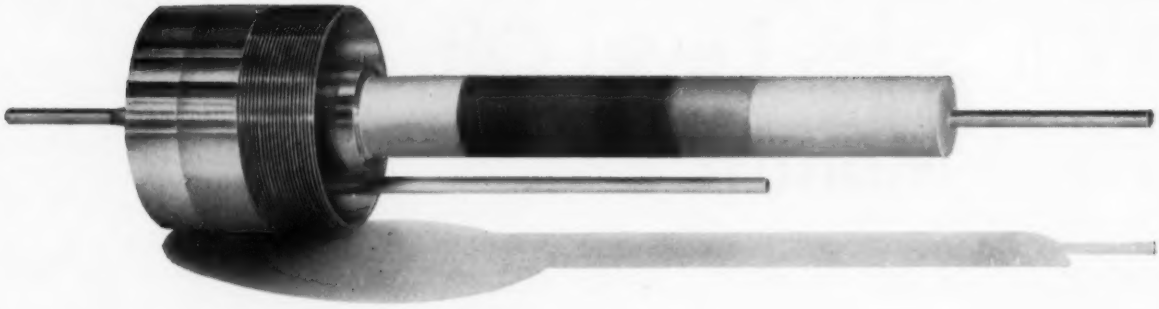
Deliveries are almost immediate. Makers have been shipping direct to customers on distributor orders. But as business picks up, so will delivery times, although not enough to cause problems.

Price Rises?—Many makers are now urging their distributors to start carrying their own inventories because they will not be able to make direct and speedy shipment to the customers if the market keeps climbing at its current rate.

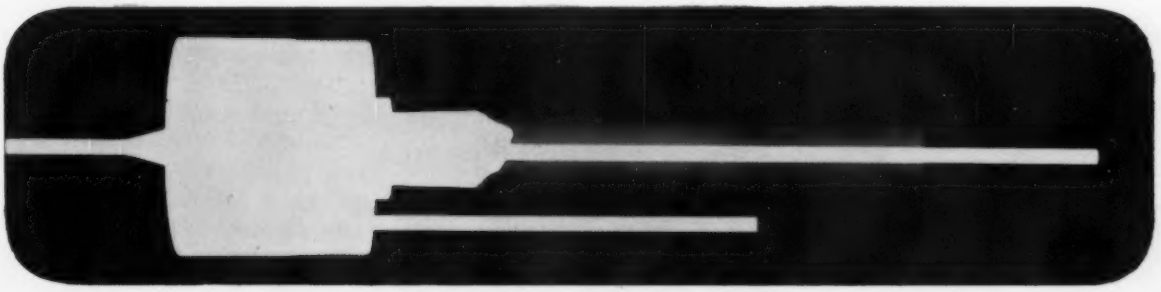
Prices have been steady for some time. But as the market firms they are expected to rise. Some factors hint at higher prices this quarter, certainly in first quarter 1959.

SHOP BEAUTY: Shop equipment is more functional, but in addition it is more attractive. Industry is finding that a worker in a pleasant atmosphere is more productive. (Columbia-Hallowell photo.)

Seal unit of one of the repeaters of a transoceanic telephone cable.



It has a 20-year job 3 miles under the sea



Radiography reveals no foreign particles or voids in molded areas, shows the ultimate contact of the molded insulation with the central conductor.

Radiography shows the rubber seal and molded parts are ready to take it

EVERY 40 MILES along a transoceanic telephone cable, there is a repeater—an electronic masterpiece designed to boost the message along and made to operate 24 hours a day for a minimum of 20 years.

Any foreign particles in the molded parts of the seal could reduce its performance. And with sea water pressures up to 8000 lbs. p.s.i. to resist, the adherence of the rubber seal areas to the central conductor and outer metal shell must approach perfection.

Radiography assists Western Electric to make sure that each repeater measures up to specification.

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TRADE MARK

Will Sales Level Off Next Month?

Combination of factors could dull sales demand, temporarily, in December.

But there are strong reasons why it's unlikely.

▪ Some market observers believe steel sales could taper off in December.

Their reasoning goes this way: Automakers may be working off November steel tonnages deferred into December. Other customers may not build steel stocks because of year-end inventory taxes. The seasonal slowdown in construction will reduce orders for plates and shapes. And holiday production cuts by steelmakers and their customer industries will also hurt.

But, despite all this, the prospect is that an order letdown is possible, but not probable. Here are the reasons:

It's true automotive steel tonnages have piled up or been pushed back by recent labor stoppages. But if automakers go all out on car production their sheet needs will continue high. In addition some non-automotive steel buyers are building stocks as a hedge against increased steel demand by Detroit.

Much the same situation exists in bar as in sheet. Also greater activity by cold finishers is putting more pressure on hot-rolled bar mills.

Seasonal factors do operate against an upturn in plate and structural orders. But some plate users are also inventory building. And a few more linepipe orders are helping plate demand.

Sheet and Strip—**Chicago** sheet mills are still about three weeks behind on deliveries, despite order deferments from automakers. Local producers there are sold out on both hot- and cold-rolled sheet through December. As a result, users are turning to out-of-the-area suppliers. These are offering hot-rolled sheet in three weeks, cold-rolled at longer delivery. Strip mills in the **Chicago** area, while better off on shipments, are booked full for this month and three-quarters full for December.

Galvanized sheet remains a runaway item in most markets. **Pittsburgh** area mills are booked into January and February. One large **East Coast** supplier is sold out through December, another is taking January orders. **West Coast** service centers are stocking up on galvanized and cold-rolled sheets.

Plates — Market continues to bump along below the overall steel operating average. Customers are buying from hand to mouth. One large **East Coast** mill is quoting heavy plate for seven to ten day delivery. Shipbuilders are the only really active buyers in the area. The **Midwest** market is a little more encouraging. Some users there are trying to build their stocks of both light and heavy plate.

Structurals—**East Coast** mills report sales are making slight, but steady, improvement. Few large construction jobs are going up for bid in that area. However, smaller-sized fabricators are helping prop up the market. **Chicago** producers can deliver many sizes in as little as two to three weeks.

Tinplate — October mill shipments, as users tried to beat Nov. 1 price increases, pushed the year ahead of 1957 levels. Now producers face a sharp letdown this month and next. But January should see a new buying surge. Canmakers indicate they will build stocks against the prospect of a steel strike in 1959.

United States Steel Export Co., effective Nov. 1, announced new base prices and revised extras and deductions on tin mill products. Changes were made at same time as new domestic tinplate prices went into effect. New export prices, per base box, are: Common coke tinplate (1.25 lb coating)—$10.99; electrolytic ferrostan 25 superdraw (0.25 lb coating)—$9.64; special coated mfg. terne plate—$10.69; and black plate—$8.74. All prices are for multiple package metal containers of 107 lb weight, 14 in. x 20 in. sheets.

Oil Country Goods—Pipe producers say oil country seamless sales are showing more life, but are still slow. One **Pittsburgh** mill reports October shipments were 12 pct over September. However, pipe suppliers don't expect any big pickup in orders until at least the first quarter.

Molybdenum — Climax Molybdenum Co., Div. of American Metal Climax, Inc., raised its prices on most molybdenum products Nov. 1 by about 5 pct. Typical prices, per pound of contained molybdenum, are: Molybdenite concentrate—$1.25; canned molybdic oxide—$1.47; and ferromolybdenum—$1.76.

PURCHASING AGENT'S CHECKLIST

Some buyers are making plans with business boom in 1960 in mind. **P. 61**

Stainless steel market begins to revive. **P. 68**

Farwest steel purchases will show increase in '59. **P. 85**

COMPARISON OF PRICES

(Effective Nov. 4, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Nov. 4 1958	Oct. 28 1958	Oct. 7 1958	Nov. 5 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30*	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.30	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.00	9.00	9.00
Special coated mfg. ternes	9.90	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

	Nov. 4 1958	Oct. 28 1958	Oct. 7 1958	Nov. 5 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57*	$70.51
Foundry, Southern Cin'ti	73.87	73.87	73.87	71.65
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07*	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41*	$66.42
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$45.50	$45.50	$44.50	$32.50
No. 1 steel, Phila. area	39.50	39.50	41.50	35.00
No. 1 steel, Chicago	43.50	42.50	42.50	32.50
No. 1 bundles, Detroit	36.50	35.50	32.50	22.50
Low phos., Youngstown	47.50	46.50	45.50	33.50
No. 1 mach'y cast, Pittsburgh	51.50	51.50	51.50	50.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	50.50
No. 1 mach'y cast, Chicago	53.50	53.50	53.50	40.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$42.83	$42.50	$42.83	$33.33
No. 2 bundles	29.50	28.83	28.83	25.00
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50	$14.50	$14.50	$15.38
Foundry coke, prompt	$18-18.50	$18-18.50	$18-18.50	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	29.00	29.00	26.50	27.00
Copper, Lake, Conn.	29.00	29.00	26.50	27.00
Tin, Straits, N. Y.	97.75	97.375*	96.75	89.625
Zinc, East St. Louis	11.00	11.00	10.50	10.00
Lead, St. Louis	12.80	12.80	11.80	13.30
Aluminum, virgin ingot	26.80	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighed index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite:

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Midwest Prices Firm But East Weakens

Increasing automotive activity is pillar of strength in Midwestern markets.

Optimism is not so common in other areas. Export cuts affect port districts.

■ The state of the scrap market continues divided along regional lines. In the Midwest and Southwest, prices are firm or rising. In the East, South, and Farwest, prices are weak.

Strength in the Midwest is due mostly to the seasonal upturn in automotive activity. Steel foundries are beginning to compete with mills for choice scrap. Even No. 2 bundles, which only a few short weeks ago were going begging, are starting to move. In Pittsburgh, demand for this grade was drawing out-of-district material from points that carry a $13 a ton shipping charge.

In a few instances, mills are ordering scrap for as far in advance as December. But in the face of the rising market, Midwestern dealers are showing signs of resisting mill offers at current price levels.

It's an altogether different story at East and West Coast ports. Automotive business in these areas doesn't amount to much. And export, the old standby in days of low domestic demand, is almost a dead duck. Canceling of export orders in New York until at least after Jan. 1 brought drops of up to $3 for openhearth scrap in that district.

Still, Midwestern strength dominates and a $1 increase in the price of No. 1 heavy melting in Chicago sent The IRON AGE Composite Price for that grade up 33¢ to $42.83.

Pittsburgh—The market is firm and more active. Prices of No. 2 openhearth grades are up $1 on the basis of orders from a local mill. Factory bundles are up $2 on latest list. Flow of No. 2 bundles into the district from the East continues. Brokers are able to fill orders for bundles at $34 with scrap that originated from points that carry $13 freight rates. This tends to hold down the local price for No. 2 bundles. On the other hand, No. 2 steel is becoming a scarce grade.

Chicago — Scattered mill purchases brought increases in openhearth, electric furnace, and blast furnace grades. Railroad scrap remained frozen as roads refused to let material go at prices in line with present mill purchase offers. Factory bundles lists for November brought on-track prices ranging from $45 to over $47, with heaviest tonnage moving at the top of that spread. Volume continued low.

Philadelphia—New weakness is developing in this market. Local mills ordered sparingly during October and at lower prices. The hoped-for upturn fizzled out. Export is still dead and No. 2 bundles are a drug on the market.

New York—Steelmaking grades tumbled as much as $3 here. Top for No. 1 heavy melting is now $28. Some brokers say they didn't expect to get much material at that price, but are now receiving fair amounts. Reasons are collapse of export market, domestic inactivity, and need for cash by yards.

Detroit — Industrial scrap held firm as factory lists closed slightly above last month. No. 1 bundles brought an average of about $40.80. Leveling off of steel production due to the slow automaking start is expected to be temporary.

Cleveland—Auto lists sold for $2 higher than a month ago. Reports are that the lists were for shipment out of the district. Dealer market is more bullish than last week, but there are few orders to ship against. Prime dealer tonnage is not plentiful.

St. Louis—A leading mill is booking scrap orders for December shipment at current prices. One railroad withdrew all but a few small items on a list of about 3000 tons.

Birmingham—Market in this area is quiet. Few purchases have been made in the past several weeks. There are signs of weakness and prices could go either way when consumers again buy in quantity.

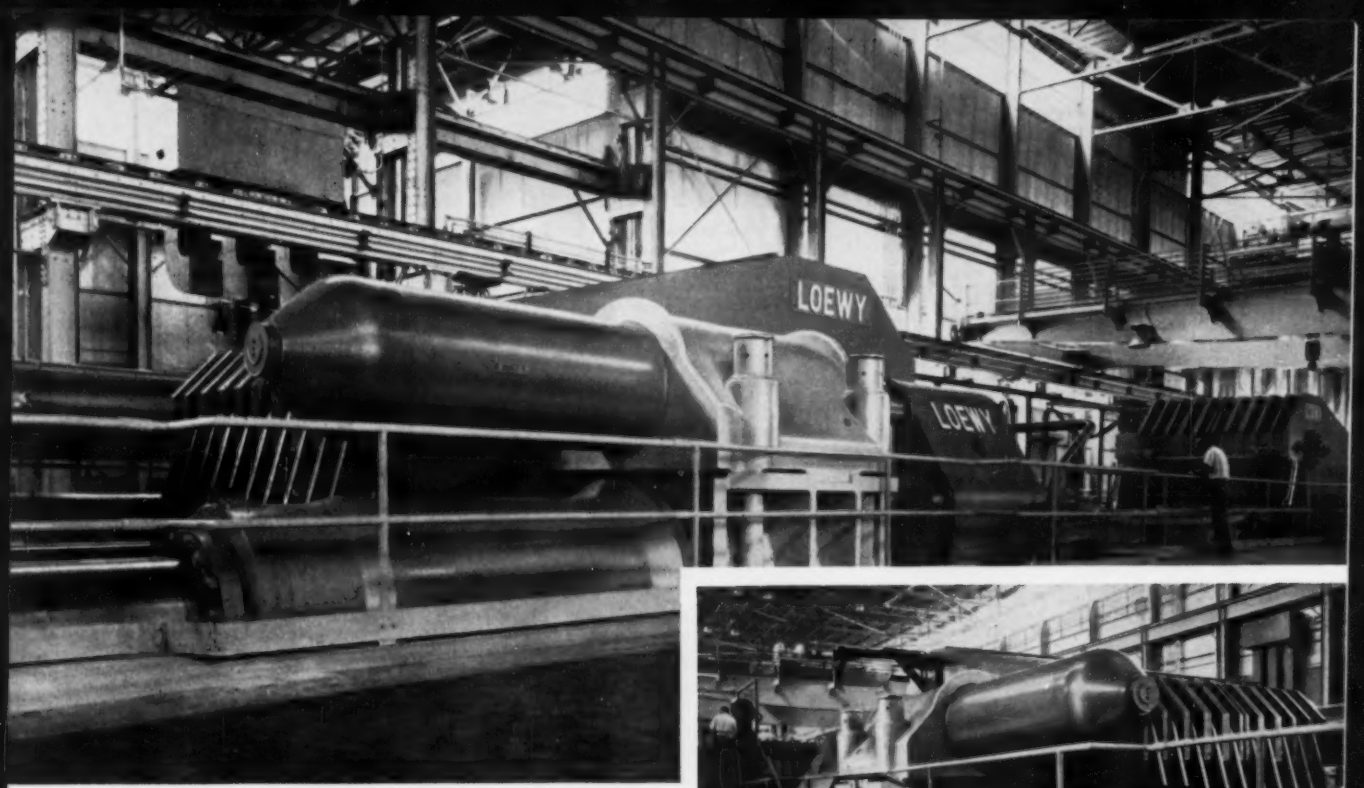
Cincinnati — Prime grades are holding firm and secondary grades went up $1 on new prices for the month from area mills. Some heavy breakable cast is finding a home locally for the first time in years as a pig iron substitute.

Buffalo — A flurry of buying stirred activity here. A major mill bought No. 1 heavy melting, No. 2 heavy melting, and No. 2 bundles at quoted prices. Some cupola cast also sold at quoted prices.

Boston—This market continues dull with no change in prices. No export business is in sight.

West Coast—There are few signs of life in the market here. Export orders are expected at the end of November. They should strengthen prices somewhat.

Houston — The market outlook continues to improve. A district mill has scheduled purchases of closer to 50,000 tons of scrap during November, rather than the 35-40,000 tons first announced. Export is quiet.



8000-ton plate stretcher-leveller as seen from the cylinder end and stationary grip head. Movable grip head is in rear.

8000-ton plate stretcher-leveller as seen from the cylinder end, operator's side.

Huge Loewy stretcher-leveller is only one in world that can handle plate up to 152 in. wide

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SCRAP PRICES *(Effective Nov. 4, 1958)*

Pittsburgh

No. 1 hvy. melting	45.00 to 46.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	45.00 to 46.00
No. 1 factory bundles	51.00 to 52.00
No. 2 bundles	33.00 to 34.00
No. 1 busheling	45.00 to 46.00
Machine shop turn.	21.00 to 22.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. punch'gs plate	50.00 to 51.00
Heavy turnings	37.00 to 38.00
No. 1 RR hvy. melting	47.00 to 48.00
Scrap rails, random lgth	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	52.00 to 53.00
No. 1 machinery cast	51.00 to 52.00
Cupola cast	45.00 to 46.00
Heavy breakable cast	43.00 to 44.00
Stainless	
18-8 bundles and solids	225.00 to 230.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	125.00 to 130.00
410 turnings	50.00 to 60.00

Chicago

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	23.00 to 24.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	24.00 to 25.00
Low phos. forge crops	53.00 to 54.00
Low phos. punch'gs plate	49.00 to 50.00
Low phos. 3 ft and under	47.00 to 48.00
No. 1 RR hvy. melting	48.00 to 49.00
Scrap rails, random lgth	53.00 to 54.00
Rerolling rails	64.00 to 65.00
Rails 2 ft and under	60.00 to 61.00
Angles and splice bars	55.00 to 56.00
RR steel car axles	72.00 to 73.00
RR couplers and knuckles	52.00 to 53.00
No. 1 machinery cast	53.00 to 54.00
Cupola cast	47.00 to 48.00
Heavy breakable cast	41.00 to 42.00
Cast iron wheels	41.00 to 42.00
Malleable	57.00 to 58.00
Stove plate	44.00 to 45.00
Steel car wheels	52.00 to 53.00
Stainless	
18-8 bundles and solids	220.00 to 225.00
18-8 turnings	130.00 to 135.00
430 bundles and solids	115.00 to 120.00
430 turnings	65.00 to 70.00

Philadelphia Area

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	20.00 to 21.00
Mixed bor. short turn.	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Shoveling turnings	24.00 to 25.00
Clean cast. chem. borings	32.00 to 33.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft, punch'gs	44.00 to 45.00
Elec. furnace bundles	42.00 to 43.00
Heavy turnings	33.00 to 35.00
RR specialties	47.00 to 48.00
Rails 18 in. and under	57.00 to 58.00
Cupola cast	40.00 to 41.00
Heavy breakable cast	42.00 to 43.00
Cast iron car wheels	44.00 to 45.00
Malleable	56.00 to 57.00
No. 1 machinery cast	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$38.50 to $39.50
No. 2 hvy. melting	33.50 to 34.50
No. 1 dealer bundles	38.50 to 39.50
No. 2 bundles	26.00 to 27.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	19.00 to 20.00
Low phos. 18 in. and under	46.00 to 47.00
Rails, random length	49.00 to 50.00
Rails. 18 in. and under	55.00 to 56.00
No. 1 cupola cast	45.00 to 46.00
Hvy. breakable cast	38.00 to 39.00
Drop broken cast	47.00 to 48.00

Youngstown

No. 1 hvy. melting	$45.00 to $46.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	45.00 to 46.00
No. 2 bundles	32.00 to 33.00
Machine shop turn.	21.50 to 22.50
Shoveling turnings	26.00 to 27.00
Low phos. plate	47.00 to 48.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	$41.50 to $42.50
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	41.50 to 42.50
No. 1 factory bundles	45.50 to 46.50
No. 2 bundles	28.50 to 29.50
No. 1 busheling	41.50 to 42.50
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	23.00 to 24.00
Cut structural & plates, 2 ft & under	48.00 to 49.00
Drop forge flashings	41.50 to 42.50
Low phos. punch'gs plate	43.50 to 44.50
Foundry steel, 2 ft & under	41.00 to 42.00
No. 1 RR hvy. melting	44.00 to 45.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Steel axle turnings	25.00 to 26.00
Railroad cast	50.00 to 51.00
No. 1 machinery cast	49.00 to 50.00
Stove plate	45.00 to 46.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles	220.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	16.00 to 17.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	45.00 to 46.00
Scrap rails, random lgth	47.00 to 48.00
Rails 2 ft and under	59.00 to 60.00
No. 1 machinery cast	48.00 to 49.00
No. 1 cupola cast	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	20.00 to 21.00
No. 1 RR hvy. melting	45.00 to 46.00
Rails, random lengths	48.00 to 49.00
Rails, 18 in. and under	53.00 to 54.00
Angles and splice bars	46.00 to 47.00
RR specialties	47.00 to 48.00
Cupola cast	48.00 to 49.00
Heavy breakable cast	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	42.00 to 43.00
Cast iron borings	22.00 to 23.00
Cast iron car wheels	44.00 to 45.00
Rerolling rails	60.00 to 61.00
Unstripped motor blocks	39.00 to 40.00

Birmingham

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	38.00 to 39.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	13.00 to 14.00
Electric furnace bundles	40.00 to 41.00
Elec. furnace, 3 ft & under	37.00 to 38.00
Bar crops and plate	45.00 to 46.00
Structural and plate, 2 ft.	44.00 to 45.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth	47.00 to 48.00
Rails, 18 in. and under	52.00 to 53.00
Angles and splice bars	48.00 to 49.00
Rerolling rails	58.00 to 59.00
No. 1 cupola cast	54.00 to 55.00
Stove plate	53.00 to 54.00
Cast iron car wheels	44.00 to 45.00
Unstripped motor blocks	43.00 to 44.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$27.00 to $28.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 dealer bundles	18.00 to 19.00
Machine shop turnings	10.00 to 11.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	14.00 to 15.00
Clean cast. chem. borings	25.00 to 26.00
No. 1 machinery cast	37.00 to 38.00
Mixed yard cast	36.00 to 37.00
Heavy breakable cast	34.00 to 35.00
Stainless	
18-8 prepared solids	190.00 to 195.00
18-8 turnings	85.00 to 90.00
430 prepared solids	70.00 to 75.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	35.00 to 36.00
Drop forge flashings	33.00 to 34.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	15.00 to 16.00
Shoveling turnings	17.00 to 18.00
Cast iron borings	17.00 to 18.00
Heavy breakable cast	32.00 to 33.00
Mixed cupola cast	41.00 to 42.00
Automotive cast	46.00 to 47.00
Stainless	
18-8 bundles and solids	205.00 to 210.00
18-8 turnings	100.00 to 105.00
430 bundles and solids	105.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	9.00 to 10.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	20.00 to 21.00
No. 1 machinery cast	33.00 to 34.00
Mixed cupola cast	33.00 to 34.00
Heavy breakable cast	30.00 to 31.00
Stove plate	32.00 to 33.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 cupola cast	45.00

Los Angeles

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn. 1 ft and under (foundry)	43.00
No. 1 cupola cast	44.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast	36.00
Mixed yard cast	36.00

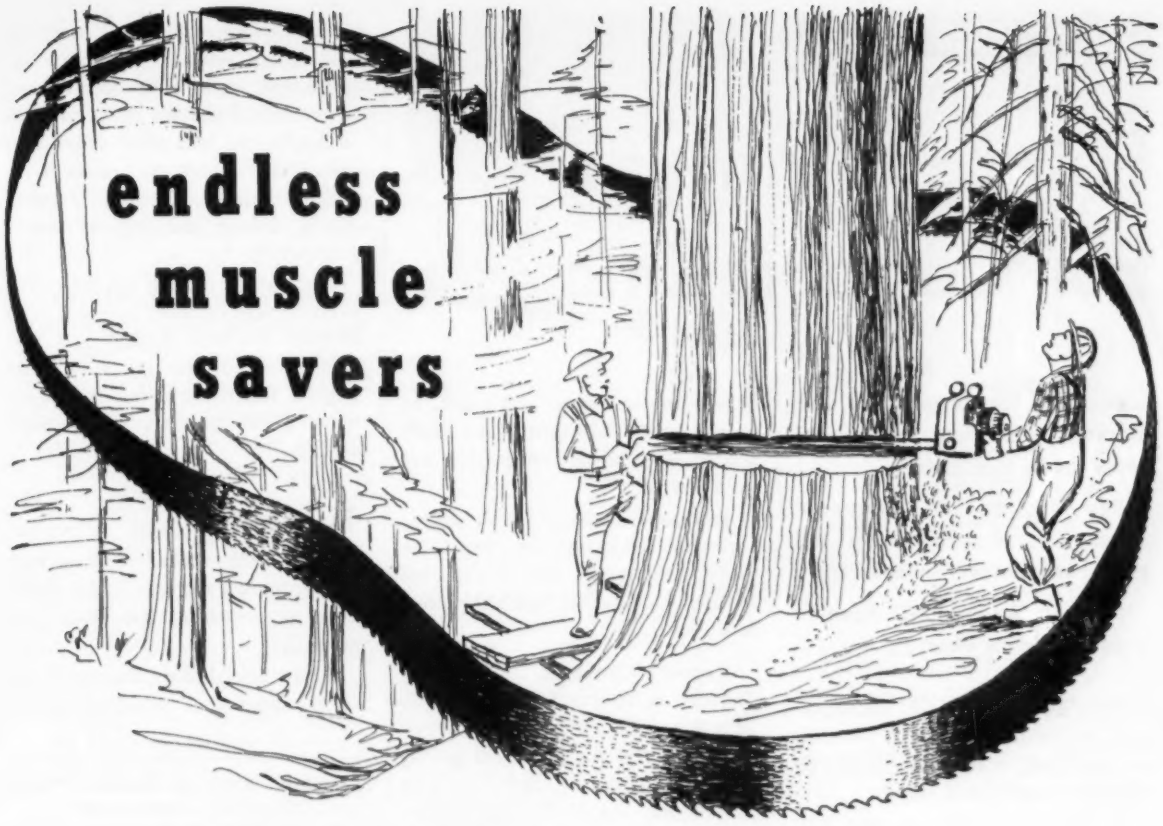
Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$39.00 to 41.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	34.00
No. 2 bundles	25.00
Machine shop turn.	17.00
Shoveling turnings	20.00
Cut structural plate 2 ft & under	$47.00 to 48.00
Unstripped motor blocks	38.75 to 39.75
Cupola cast	47.00 to 48.00
Heavy breakable cast	30.00 to 31.00



In London, 145 years ago, William Newberry patented the first endless band saw. But to Perine, in Paris, is due credit for improvements, devised some forty years later, which made general use of the band saw possible. These improvements consisted mainly in securing a satisfactory joint, and steel of sufficient pliability.

Now, endless demands on steel—for muscle-savers, time-savers, and cost-savers—are being made by industry, agriculture, transportation, construction and the military. To meet these requirements, an endless supply of scrap must be maintained.

For the purchase or sale of iron or steel scrap . . .

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Future Brightens For Copper, Zinc

Chances for copper and zinc markets to confirm the current price levels look better.

Key factors are increased production of fabricators, and their rock bottom inventories.

It looks like lead will have to wait until next year.

▪ With one-third of the last quarter over, the market picture for copper and zinc is beginning to look brighter. Lead is still cloudy.

In the latter, the business just doesn't seem to be there. Users did some hedge buying about a month ago on the chance that the import quota might firm the market. It hasn't. They are unlikely to buy any more than they absolutely need until their business really picks up. This is not likely to happen in 1958.

Despite apparent firmness of prices, copper and zinc are not out of the woods. But both have more reason to expect they might be this quarter than they did a month ago.

Alike — Their situations differ widely, but there are some factors that affect both.

Factor 1: A check of both zinc and copper fabricators indicates their output, which began inching up in the third quarter, is starting to gain momentum. The consensus of major manufacturers of the durables that make up the major markets for zinc and copper shapes is that their output this quarter will be markedly better than the third quarter.

Factor 2: It is now clear that inventory cutting by copper and zinc fabricators was deep and quick. In many cases fabricators say their stocks are now as low as they are going to get.

Increased business, with inventories at rock bottom spells inincreased buying. This is the case in both metals. But there the similarity ends.

Copper's Problems — To date, increase in copper fabricator business has been gradual. The dominant factor in the increased buying has been optimism, and strikes in Africa and Canada. In other words, fabricators have been buying more for inventory than current output. Their hedging pushed the price to higher levels than the supply and demand picture has warranted. But the spurt in their business now making itself felt may send fabricators into the market for enough copper and copper alloy mill shapes to confirm copper's lofty price levels.

Zinc Potential — Zinc users on the other hand, have been buying little for inventory. Most of them took the position that the import quota would do little to really firm the market. They did little hedge buying.

They were right. But in the meantime, demand for diecastings and galvanized products is starting to gain strength. If it keeps increasing at the current rate, zinc fabricators may decide the current recovery has gone far enough for them to start some inventory rebuilding.

Consumer Spending — Consumer spending for durables is the big question mark. In the long run this will supply the climate in which nonferrous markets will operate. The recent spurt in fabricator activity appears to have been caused by a revived interest by consumers in appliances and some other major household items. More construction starts is helping copper-wiring, tubing and foil; and zinc-galvanizing.

The overall picture still lags however, mostly because of slack auto buying. The new models, and bargain prices to clear out 1958's has helped. But the real test will come when 1959 cars are in adequate supply.

Titanium

This week started with a very cloudy market picture. And it didn't clear up much as the week progressed.

Last week Mallory-Sharon Metals Corp. announced reductions in the

Monthly Average Metal Prices
(Cents per lb except as noted)

Average prices of the major nonferrous metals in October based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd Conn. Valley	27.61
Copper, Lake	27.61
Straits Tin, New York	96.462
Zinc, E. St. Louis	10.87
Lead, St. Louis	12.47
Aluminum ingot	26.80

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	28.80	26.10	8/1/58
Copper (E)	29.00	27.50	10/23/58
Copper (CS)	30.00	28.50	10/20/58
Copper (L)	29.00	27.50	10/23/58
Lead, St. L.	12.80	12.30	10/14/58
Lead, N. Y.	13.00	12.50	10/14/58
Magnesium ingot	36.00	34.00	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	182-182	185-205	11/3/58
Zinc, E. St. L.	11.00	10.50	10/8/58
Zinc, N. Y.	11.50	11.00	10/8/58

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne, Canada. ZINC: prime western. TIN: see right; other primary prices, pg. 170.

prices of titanium sponge, billet, bar, and extras.

Du Pont, another producer of all three items, decided to hold its price line.

A third producer, Titanium Metals Corp. of America, met Mallory-Sharon's competition on billet and bar, but hesitated on sponge.

New Prices — Mallory-Sharon's new titanium sponge price for quantities over 500 lb, to maximum brinell hardness of 100, is $1.62 per lb, down 20¢.

Billet prices have been lowered by Mallory-Sharon and TMCA to $3.80 per lb, from former level of $4.10. Finishing extras cut are grinding from 40¢ to new price of 30¢, and lathe turning down from 80¢ to 60¢ per lb.

These two producers have also dropped bar prices to $5.10 per lb, from $5.25.

All finishing extras are reduced by 15¢ per lb by M-S, and TMCA.

Aluminum

Shipments of sheet, plate and foil were up in September over August, reports the Aluminum Assn.

Total sheet and plate shipped rose from 91.9 million lb in August to 100.5 million lb in September.

Both heat-treatable and non-heat-treatable shared in the rise. The total for the first three quarters of 1958 was 873.8 million tons.

Foil shipments were 17.3 million lb in September, from 16.5 million lb in August.

Magnesium

Total castings shipments in August, last month for which figures are available, were off, reports the Magnesium Assn.

The drop was due to normally slack summer shipments of anodes and die castings.

Tin prices for the week: Oct. 29—97.375; Oct. 30—97.375; Oct. 31—97.875; Nov. 3—97.75; Nov. 4—election day.

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136 .249	.250- 3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	5/16-⅝	¾-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velsco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	52.13	.....	49.36	52.32
Brass, Yellow	45.57	46.11	45.51	48.48
Brass, Low	48.23	48.77	48.17	51.04
Brass, R L	49.17	49.71	49.11	51.98
Brass, Naval	49.74	.....	44.05	52.90
Muntz Metal	47.85	.....	43.66	.....
Comm. Bz.	50.65	51.19	50.59	53.21
Mang. Bz.	53.44	.....	47.64	.....
Phos. Bz. 5%	71.09	.....	71.55	.....

Free Cutting Brass Rod 29 28

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.10-$5.50; alloy, $5.10-$6.35; billets, HR, commercially pure, $3.80-$4.35; alloy, $3.80-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb cont'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.45
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb) ....$2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 35.00 to 42.00
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz..$ 2.25
Iridium, dollars per troy oz. ...$70 to $80
Lithium, 98% .....$11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York .....$231 to $235
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz...$15 to $17
Platinum, dollars per troy oz...$57 to $60
Rhodium .....$120.00 to $125.00
Silver ingots (¢ per troy oz.) 90.125
Thorium, per kg. $43.00
Vanadium .....$ 3.45
Zirconium sponge .....$ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 ..... 29.00
No. 120 ..... 28.25
No. 123 ..... 27.00
80-10-10 ingot
No. 305 ..... 33.25
No. 315 ..... 31.25
88-10-2 ingot
No. 210 ..... 40.25
No. 215 ..... 36.00
No. 245 ..... 32.75
Yellow ingot
No. 405 ..... 24.00
Manganese bronze
No. 421 ..... 25.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.75-25.00
0.60 copper max. 24.50-24.75
Piston alloys (No. 122 type)..24.25-25.25
No. 12 alum. (No. 2 grade)...21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)...24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

(Effective Nov. 3, 1958)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	23½	22⅝
Yellow brass	18	15¼
Red brass	20⅝	20
Comm. bronze	21⅛	20⅞
Mang. bronze	16⅝	15⅞
Yellow brass rod ends	16¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25⅜
No. 2 copper wire 24¼
Light copper 22
*Refinery brass 24¼
Copper bearing material 23
* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25¾
No. 2 copper wire 24¼
Light copper 22
No. 1 composition 21
No. 1 comp turnings 20½
Hvy. yellow brass solids 15
Brass pipe 17¼
Radiators 17½

Aluminum

Mixed old cast. ..... 12½—13
Mixed new clips ..... 15½—16½
Mixed turnings, dry ..... 13½—14½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 23¾—24¼
No. 2 copper wire ..... 21¾—22¼
Light copper ..... 19¾—20¼
Auto radiators (unsweated). 14 —14½
No. 1 composition ..... 17½—18
No. 1 composition turnings.. 16½—17
Cocks and faucets ..... 14 —14½
Clean heavy yellow brass ... 12¼—12¾
Brass pipe ..... 14 —14½
New soft brass clippings .... 14½—15
No. 1 brass rod turnings .... 12 —12½

Aluminum

Alum. pistons and struts .... 5¼— 5¾
Aluminum crankcases ..... 9¼— 9¾
1100 (2S) aluminum clippings 12¾—13¼
Old sheet and utensils ..... 9¼— 9¾
Borings and turnings ..... 6¼— 6¾
Industrial castings ..... 9¼— 9¾
2024 (24S) clippings ..... 10¾—11¼

Zinc

New zinc clippings ..... 4½— 5
Old zinc ..... 3¼— 3½
Zinc routings ..... 2 — 2¼
Old die cast scrap ..... 1¾— 2

Nickel and Monel

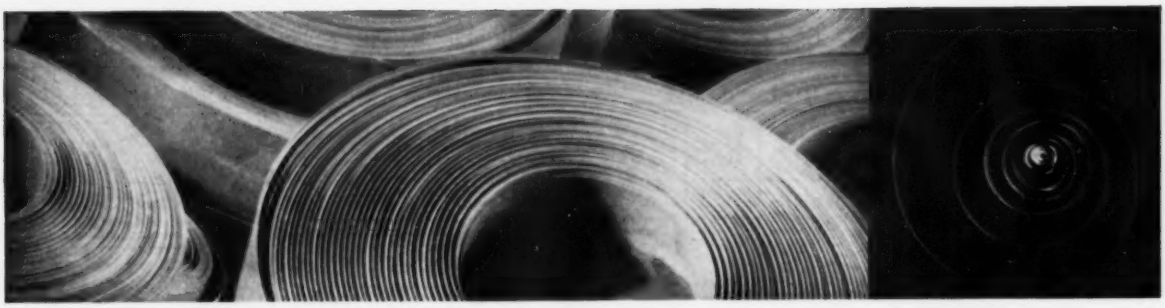
Pure nickel clippings 52-54
Clean nickel turnings 37-40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 30-32
Clean Monel turnings 30-32
Old sheet Monel 26-28
Nickel silver clippings, mixed 18
Nickel silver turnings, mixed 15

Lead

Soft scrap lead ..... 8 — 8¼
Battery plates (dry) ..... 2¾— 3
Batteries, acid free ..... 3½— 3¾

Miscellaneous

Block tin ..... 75 —76
No. 1 pewter ..... 59 —60
Auto babbitt ..... 39 —40
Mixer common babbitt ..... 9½—10
Solder joints ..... 13¼—13¾
Siphon tops 42
Small foundry type ..... 10½—10¾
Monotype ..... 10½—10¾
Lino. and stereotype ..... 9½— 9¾
Electrotype ..... 8½— 8¾
Hand picked type shells .... 6½— 7
Lino. and stereo. dross ..... 2¾— 3
Electro dross ..... 2¼— 2½



How they're using

Wallace Barnes Cold-rolled Specialty Steels

1. *In Three Drawing Stations*

The part shown in illustration one was made from .59 – .74% carbon steel in three drawing stations. From .70 – .80% carbon, this piece should have four or five drawing stations. The piece could be made from .90 – 1.05% carbon, but would require seven drawing stations with fully annealed steel.

2. *Blanked on 45° Angle*

The stamping shown in the second illustration was made from .70 – .80% carbon spring steel. It was blanked and pierced on a 45° angle, with small holes pierced to prevent fracture in later forming and bending. It was then given severe secondary forming. The small tab shows "orange peel" and probable fracture would occur if the part were formed from .90 – 1.05% carbon.

3. *All Flanging One Operation*

Our third part is a gun stamping made from .70 – .80% carbon with a sharp bend with the grain in one stroke of the press. Higher carbon will fracture due to its less ductile qualities.

4. *Thirteen Steps Progressive*

The fastener shown in the fourth illustration was made from the .59 – .74% carbon steel, the only spring steel which would take the bends and draws to which it is subjected here. All the higher carbon steels were rejected because they failed under the cold-work necessary to produce the two small extrusions. It took seven reductions to bring these extrusions within tolerance. There were thirteen steps total in the progressive die.

These examples show how proper steel selection may save operations and insure satisfactory performance. Among the many sizes and types of Wallace Barnes cold-rolled specialty steels is the right one for your application. Send for "Physical Property Charts" giving tensile strength and forming properties of Wallace Barnes tempered steels.

Wallace Barnes Steel Division

Bristol, Connecticut

Associated Spring Corporation

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		15.50 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,D2,P11*	7.575 *G3*	10.80 *D2, S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*			5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.325 *J3* 9.30 *C1*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.90 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$113.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2, R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Nov. 3, 1958)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb. 0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.775 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.1.0 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3,W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3,Y1*	6.275 *U1, I3,Y1*	6.875 *U1, I3*	6.775 *U1, I3,Y1*	7.225 *U1*	7.525 *U1, Y1,I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1,Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1**, *R3*	7.525 *R3, S1*	9.275 *S1, R3*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3,P6*	6.275 *U1, J3,P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3,P6*	$10.40 *W5, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3,W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2,R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

*Electrogalvanized sheets.

(Effective Nov. 3, 1958)

*7.425 at Sharon-Niles is 7.225

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Conteaville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.475 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7, A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*	7.925	5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6*	6.425 *B2*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Nov. 3, 1958) * Special Quality.

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Lackede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.**

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11¢ per lb.

(Effective Nov. 3, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2

High-carbon chromium.. .955 D-3, D-5
Oil hardened manganese .505 O-2
Special carbon ..... .38 W-1
Extra carbon ..... .38 W-1
Regular carbon ..... .325 W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302				37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25			
Cleveland *R3*						15.35
So. Chicago *R3*				10.10		
Ensley *T2*	5.75	6.725				
Fairfield *T2*		6.725		10.10	6.875	
Gary *U1*	5.75				6.875	
Huntington *C16*		6.50				
Ind. Harbor *Y1*				10.10		
Johnstown *B3*		6.725				
Joliet *U1*			7.25			
Kansas City *S2*				10.10		15.35
Lackawanna *B3*	5.75	6.725	7.25		6.875	
Lebanon *B3*			7.25			15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*						14.75
Pittsburgh *J3*				10.10		
Seattle *B2*					6.75	15.85
Steelton *B3*	5.75		7.25		6.875	
Struthers *Y1*				10.10		
Torrance *C7*					6.75	
Williamsport *S5*		6.50				
Youngstown *R3*				10.10		

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50
Foundry, beehive (f.o.b.)	$18.00 to $18.50
Foundry oven coke	
Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field		9.875	
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor		12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100, 110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky....	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk...	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Missouri Valley	15.00
Midwest	17.00

(Effective Nov. 3, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Manufd. Wire Annl'd ¢/lb.	Manufd. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	...	...	190	9.00	9.675
Atlanta *A8***	175	192	...	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	...	...	...	...	...	9.00	9.55*
Chicago *N4***, Chicago *R3*	173	190	172	212	196	8.65	9.325
Cleveland *A6*	...	...	...	...	...	9.00	9.55
Cleveland *A5*	...	...	...	...	...	9.00	.....
Crawf'dsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	...	...	...	...	...	...
Houston *S2*	...	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	...	219	203	9.10	9.775
Johnstown *B3***	173	190	177	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2*****	...	...	...	...	...	9.95	10.62‡
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	177	217	198†	9.25	9.80†
Monessen *P6*	...	...	...	...	193	8.65	9.325
Palmer, Mass. *W6*	...	...	...	...	...	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.60	10.15
Rankin, Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*	...	...	...	236	...	9.95	10.50†
Sparrows Pt. *B3***	175	...	...	214	198	9.10	9.775
Struthers, O. *Y1**	...	...	...	...	...	8.65	9.20
Worcester *A5*	179	...	...	...	...	9.30	9.85
Williamsport *S5*	...	...	...	...	...	...	...

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	...	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	...	...
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	...	...
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	...	...
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	...	...	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	...
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	...
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	...
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	...	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Per pound, in ton lots for minus 100 mesh

Sponge iron, 98+% Fe, 100 mesh, freight allowed east of Miss. River, ocean bags, 23,000 lbs. and over ..... 10.5¢
Sponge iron, 98+% Fe, 100 mesh, f.o.b. point of origin for shipment west of Miss. River, 100 lb. bags ..... 9.5¢
100 mesh, cutting and scarfing grade, 100 lb pails ..... 8.5¢
40 mesh, welding rod coating, 100 lb. bags ..... 7.7¢
Canadian sponge iron, del'd in East, 23,000 lbs. and over ..... 10.5¢
Atomized iron powder, 98% + Fe, 40 mesh, f.o.b. point of origin, in 100 lb. bags ..... 7.7¢
Atomized iron powder, 98% + Fe, f.o.b. point of origin, in 100 lb. bags—RZ-365—freight allowed east of Miss. River ..... 10.5¢
Atomized iron powder, 98% + Fe, cutting and scarfing grade, f.o.b. point of origin ..... 8.5¢
Electrolytic iron, annealed, 100 mesh iron powder, f.o.b. point of origin ..... 10.5¢
imported 99.5+% Fe .... 24.5¢
200 mesh ..... 33.0¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe 57.0¢
Hydrogen reduced, 100 mesh iron powder, f.o.b. point of origin, 23,000 lbs and over 11.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe.. 88.0¢ to $2.85
Aluminum, freight allowed.. 38.00¢
Brass, 5000 lb. lots ..... 31.0¢ to 46.7¢
Cobalt, reduced, 99.75% f.o.b. point of origin $2.94
Copper, electrolytic ..... 41.00¢
Copper, electrolytic, imported, per lb., New York. 41.9¢
Copper, precipitated, 24,000 lbs. and over, del'd ..... 40.5¢ to 45¢
Copper, atomized ..... 39.8¢ to 48.3¢
Chromium, electrolytic, 99.85% min. fe .03 mix. del'd $5.00
Lead, f.o.b. point of origin (20,000 lbs. or more) .... 19¢
Manganese, f.o.b. point of origin ..... 46.0¢
Molybdenum, 99% ..... $3.60 to $3.95
Nickel ..... $1.05 to $1.13

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Bolts	Pct. Discounts 1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine ½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1½" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	45	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

	Full case or Keg price
Nuts, Hex, HP reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
C. P. Hex, reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	41
Semi-finished Hex Nuts	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished
⅞ in. and smaller 65

Rivets	*Base per 100 lb*
½ in. and larger	$12.85
	Pct. Off List
7/16 in. and smaller	15

Cap Screws

Discount (Packages)
Full Finished H. C. Heat Treat

New std. hex head, packaged	Full Case
⅝" diam. and smaller x 6" and shorter	54 42
¾", ⅞", and 1" diam. x 6" and shorter	38 23
⅝" diam. and smaller x longer than 6"	.. ..
¾", ⅞", and 1" diam. x longer than 6"	.. ..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Stove Bolts
Plain Finish		
Cartons	60	60
Bulk		
Quantity		
To ¼" diam. incl. 25,000-and over	60	..
5/16 to ½" diam. incl. 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk		
⅜" diam. & smaller 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper
Rolled elliptical, 18 in. or longer, 5000 lb lots 41.50
Electrodeposited 32.75
Brass, 80-20, ball anodes, 2000 lb or more 45.50
Zinc, ball anodes, 2000 lb lots 16.50
(for elliptical add 1¢ per lb)
Nickel, 99 pct plus, rolled carton, 5000 lb 1.0225
(Rolled depolarized add 2¢ per lb)
Cadmium 1.55
Tin, ball anodes $1.05 per lb (approx.).

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum 66.20
Copper sulphate, 100 lb bags, per cwt. 22.15
Nickel salts, single, 100 lb bags.... 45.00
Nickel chloride, freight allowed, 100 lb 82.25
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums 23.70
(Philadelphia price 24.15)
Zinc cyanide, 100 lb 60.75
Potassium cyanide, 100 lb drum N. Y. 45.50
Chromic acid, flake type, 10,000 lb or more 30.44

CAST IRON WATER PIPE INDEX

Birmingham 125.8
New York 138.7
Chicago 140.9
San Francisco-L. A. 148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 8615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*				
Baltimore	$.10	8.65	9.35	9.89	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.88
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99					
Boston	.15	9.48	10.54	11.55	9.84	10.17	10.13	10.26	13.49*	16.79	15.81	20.29	19.56
Buffalo	.15	8.40	9.75	11.45	8.90	9.35	9.40	9.38	11.60*	16.34	15.55	19.01	19.30
Chicago	.15	8.40	9.60	10.65	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati	.15	8.58	9.65	10.70	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland	.15	8.51	9.69	10.35	8.78	9.28	9.54	9.25	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.00	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84
Detroit	.15	8.66	9.85	11.02	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles		8.70[5]	11.20–11.80	12.15	9.15	9.10	9.25	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	.15	8.55	9.80		8.60	8.93	9.01	8.97	12.11*				
Milwaukee	.15	8.54	9.73	10.79	8.80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	.10	8.97	10.23	10.66	9.74	9.87	9.84	10.09	13.31*	16.16	15.60	20.10	19.35
Norfolk	.20	9.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia	.10	8.10	10.00	10.44	8.80	8.85	8.60	8.75	12.05*	16.58	15.58	20.08	19.33
Pittsburgh	.15	8.50–8.60	9.70–9.95	11.00	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	15.30*	18.80	17.45	20.75	20.25
San Francisco	.10	9.75	11.20	11.40	9.85	10.10	9.95	10.25	13.85	17.05	16.35	21.05	20.60
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.70	17.15	16.80	20.65	20.60
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.85	17.75	16.95	21.55	20.75
St. Louis	.15	8.69	9.94	11.03	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.70[7]	10.16		15.41		19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] 4½" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999; [8] 15 ga. & heavier.

(Effective Nov. 3, 1958)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50-52.75	61.50	32.00	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Detroit, *M2*; Louisville, O., *R5*.

Strip: Midland, Pa., *C11*; Waukegan, Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; W. Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Detroit, *S1*; Canton, Massillon, O., *R3*; Harrison, N. J., *D3*; Youngstown, *R5*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); New Bedford, Mass., *R6*; Gary, *U1* (25¢ per lb. higher).

Bar: Baltimore, *A7*; S. Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1*, *F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R5*; S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*, *R3*; Ft. Wayne, *I4*; Detroit, *R5*; Gary, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*; Detroit, *R5*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*.

Plates: Baltimore, *E1*; Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Vandergrift, Pa., *U1*; Gary, *U1*.

Forging billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*; Detroit, *R5*; Munhall, Pa., S. Chicago, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*.

(Effective Nov. 3, 1958)

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 36.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.
0.10% max. C $1.29
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.
Carloads $1.15
Ton lots 1.17
Less ton lots 1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.
Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads, bulk 24.00
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads, bulk 23.00
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.
Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:
Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.
Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen - removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn (Bulk)	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.
Carloads bulk 12.80
Ton lots, packed 14.45
Carloads, bulk, delivered, per lb of briquet 15.10
Briquets, packed pallets, 3000 lb up to carloads 16.30

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	24.95	23.65
98% Si, 1.0% Fe	24.45	23.15

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.
Carloads, bulk 8.00
Ton lots, packed 10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
		90% Si....	20.00

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

	Cents per-lb
Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Nov. 3, 1958)

Aisifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.
Carloads, bulk ..... 9.85¢
Ton lots ..... 11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.28

Ferrocolumbium, 50-60% lb. 2 in. x D, delivered per pound contained Cb.
Ton lots $3.90
Less ton lots..... 3.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta $3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.41
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.
Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium silicon, per lb of alloy 35-40% del'd, carloads, bulk.. 26.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.
Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

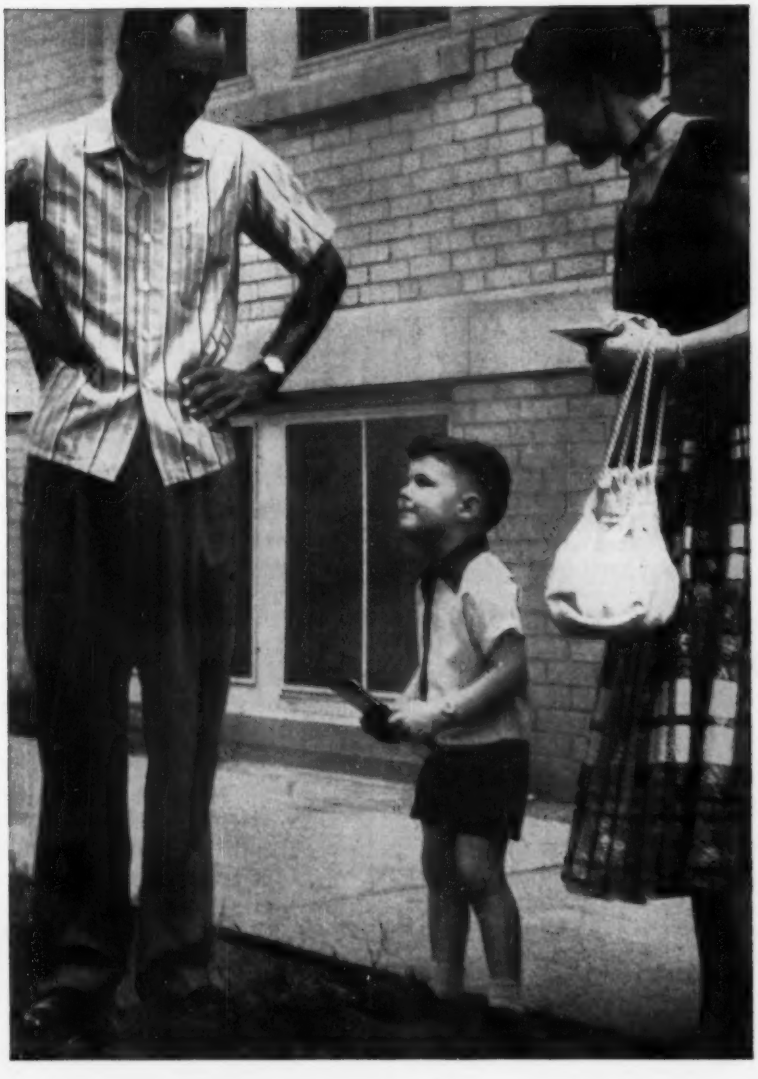
Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots... $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up
10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over
No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15



"AM I GOING HOME?"

This is an actual photograph of a boy with pulmonary tuberculosis.

Years ago he might *not* have gone home, ever! But thanks to today's modern methods, his case was diagnosed early—and after only a few months of treatment, he was released from the hospital.

Your purchase of Christmas Seals helps to make true stories like this possible—through continually improved TB *diagnosis*, *research*, and *patient rehabilitation*. Send your contribution today, please. ***Buy and use Christmas Seals.***

This space contributed to the National Tuberculosis Association and its affiliates by

The IRON AGE

Buying Mood Grows In Pittsburgh

Used machinery inquiries are still leading orders, dealers say.

But there's more sales activity for fabricating and toolroom equipment.

▪ Pittsburgh dealers report a general quickening of market activity. For the most part the improvement has been a matter of inquiries rather than orders. But dealers report a better feeling is abroad.

For one supplier of steel mill equipment, the upturn has definitely arrived. Orders are up sharply over this time last year. Both domestic and foreign markets share in an improvement that began around August. There is no special product emphasis—just a broad advance.

More Asking—In the general machinery field, a dealer reports that large plants are talking in specific terms about orders. There is still a problem shaking money loose, but companies are asking prices and are acting as though they are ready to do business.

Interest seems to center on press brakes, rolls, shears, and other fabricating lines. Machine tools are less active. There is a good supply of equipment available but pricing is a problem. Equipment is going at plant auctions at 80-90 pct of the new price. A 64-in. Bullard mill was recently sold at the new price after 10 years service.

"The same guys want to sell at new equipment prices and buy at scrap prices," said one dealer.

Electrical Lull—Orders for electrical equipment have settled into a lull after a five week spurt. However business is much better than it was towards the end of the first half.

One encouraging development in the electrical picture: Some of the pressure to conserve cash seems to be coming off. Orders that were held up six months ago are now being placed. Plants are returning to more normal buying habits.

Demand for materials handling equipment is still spotty. Dealers will have one good week and then a slow one. Orders are mostly for conveyors and hoists.

Sales of Used Machine Tools

September, 1958

	Dollar Sales	Tools Billed at $200 or More
Change from August, 1958	**+21.7 pct**	**+25.6 pct**
Change from September, 1957	**—2.9 pct**	**+9.7 pct**

Source: Machinery Dealers National Assn.

CONSIDER GOOD USED EQUIPMENT FIRST

ANGLE BENDING ROLL
4" x 4" x ⅝" Thomas #3 Horizontal

BALERS
Model 115P Logemann Hydraulic, Box 100" x 48" x 24" Bale Size 24" x 14" x 16"
Model 132PXT6 Logemann Hydraulic Baler Box 76" x 18" x 80" Deep, Bale 18" x 8"

BENDING ROLLS
12' x ⅝" Hilles & Jones Pyramid Type
18' x 3/16" Bertsch Initial Type—NEW
32' x ⅝" Baldwin Pyramid Type

BRAKE—LEAF TYPE
13' x ¼" Dreis & Krump #226

CRANES—OVERHEAD ELECTRIC TRAVELING

7½ ton P&H	60' Span 230 Volt D.C.
8 ton P&H	55' Span 220/3/60
10 ton P&H	50' Span 230 Volt D.C.
10 ton P&H	39' Span 230 Volt D.C.
10 ton Milwaukee	57' Span 230 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Whiting	75' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton P&H	50' Span 230 Volt D.C.
15 ton Northern	54' Span 230 Volt D.C.
15 ton Shepard Niles	56' Span 230 Volt D.C.
15 ton N-B-P	100' Span 220/3/60 A.C.
120 ton Shepard Niles	77' Span 220/3/60

DRAW BENCHES
3000 lb. Draw Bench, 20 ft. Pull
7000 lb. Draw bench, 50 ft. Pull—New 1956
10,000 lb. Draw Bench, 50 ft. Draw—LATE

FORGING MACHINES
1" to 5" Acme, Ajax, National

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. incl.

LEVELERS—ROLLER
54" McKay 17 Rolls 4⅛" dia.
60" Aetna Standard, 17 Rolls 4⅝" dia.
72" McKay, 15 Rolls 4¼ dia.
84" Bliss 17 Rolls 5⅛" dia.

PRESSES—HYDRAULIC
500 ton Watson Stillman Piercing Press 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
600 ton Birdsboro, Platen 48 x 48", 15" Stroke
1000 ton HPM Fastraverse, Bed 48" x 72", 36" Stroke
4500 ton B-L-H Bed 68 x 68", Stroke 40"

PRESSES—STRAIGHT SIDE
100 ton Toledo #57½, 10" Stroke, Bed 20" x 20"
215 ton Clearing, 24" Stroke, Bed 36" x 42"

PRESS—TOGGLE DRAWING
#168⅜ Toledo, 18" Stroke of Blankholder, 28" Stroke of Plunger, Bed 48" x 51"

PUNCH & SHEAR COMBINATIONS
Buffalo #1½ Ironworker
Cleveland Style C; Arch Jaw, Capy. ¾" x ¾"
Cleveland Style EF, Capy. 1¼" x 1"

ROLLING MILLS
6" x 5" Torrington Flat Wire Mill Line
2½" x 9" x 9" 4-High Strip Mill
3¼" x 7" Six Roll Cluster Mill
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 24" Single Stand Two High
20" x 36" Single Stand Two High

ROLLS—FORMING
6 Stand Dahlstrom #450-6 for stock to 4⅛" wide up to 11 Ga.
18 Stand Custom Built, 2⅛ Shaft, will take 36" wide

ROLLS—PLATE STRAIGHTENERS
108" Bertsch, Seven Rolls 9" Dia.
72" Niles 7 Rolls 9" Dia. Motor Driven

SHEAR—ANGLE
6 x 6 x ⅝" Hilles & Jones

SHEAR LINES
36" x .020 Ga. Hallden Shear Line
90" Cleveland, Capy. 14 Ga. Pay Off & Tables

SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
10' x ⅜" Niagara
14" x 3/16" Cincinnati #1814

SLITTERS
12" Waterbury Farrel, 2⅜" Dia. Arbor
20" Yoder M-2-⅛ Slitting Line
36" Yoder, 4⅛" Dia. Arbor

STRAIGHTENERS
Torrington #1734 12-Roll, Capy. 1⅜" Rd. 1-9/16"
13" Yoder Pull Thru Type Slitter
16" & 24" Waterbury Farrel Slitting Lines
⅛" Shuster, With 12 ft. Cut Off
⅜" Shuster, With 12 ft. Cut Off

SWAGING MACHINES
#4A Standard 2-Die, Capy. 2¼" Tube
#6½A Fenn Capacity 3⅜ Tube 1¼" Solid
10" Die Length Hydraulic Feed, LATE

TESTING MACHINES
20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Baldwin Southwark Compression
60,000 lb. Olsen Univ. Hydraulic

TUBE REDUCERS
1¼" Tube Reducer for steel
2½" Tube Reducer for aluminum

WIRE DRAWING MACHINE
Type B Morgan 4-Block Capy. #5 Rod down

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America's dominant medium
for Compressors—AMERICAN

100 CFM	125 psi	8 x 7 Ing. or Worth.
138 CFM	100 psi	7 x 7 Ing. ES-1.
268 CFM	500 psi	10-4¼ x 10 Ing.
465 CFM	100 psi	12 x 11 Ing.
502 CFM	125 psi	12 x 13 Worth. HB.
585 CFM	100 psi	15-9¼ x 12 Ing. 3-60-4180.
590 CFM	100 psi	13½-8 x 8 Penn. DE2- 3-60-220.
628 CFM	100 psi	14 x 13 Worth. HB.
676 CFM	100 psi	15-9¼ x 12 Ing. XRB-Worth.
860 CFM	125 psi	13-8 x 7 Joy WN102 150 HP 3-60-440.
870 CFM	125 psi	17-10½ x 17 Ing. XRE 3-60-220.
973 CFM	125 psi	16-10 x 7 Ing. XLE 150 HP Syn 3-60-440.
1055 CFM	100 psi	18-11 x 12 Ing. XRE.
1302 CFM	125 psi	20-12 x 14 Chic. OCE 225 HP Syn 3-60-440.
1352 CFM	125 psi	18½-11½ x 8½ Ing. XLE 200 HP Syn 3-60-2300 .8PF.
3852 CFM	110 psi	33-29½ x 24 Ing. PRE2 700 HP 3-60-2200.

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DELL & 48TH STREET
NORTH BERGEN, N. J.
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1500 HP D.C. MOTORS

1500 HP—525 volts D.C.—600 R.P.M.—NEW—2-bearing continuous duty motors—manufactured by Westinghouse. In original crates. From Navy Destroyer Escort. SPECIFICATIONS: 2-bearing 1500 HP—525 volts DC—2270 amps—600 RPM—ambient temperature 40°C—class B insulation—2-bearing pedestal sleeve type—shunt wound—efficiency 94.23%. ONLY 6 AVAILABLE—BUY NOW AND SAVE. Suitable for steel mill drive—offshore oil rigs—rolling mill drive—dredge pump applications.

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PLATE SHEARS

126"x¼" BLISS MILL TYPE Holddown 20" Gap	100"x1" BERTSCH 26" Gap Holddown
156"x¾" R&M Holddown 30" Gap	120"x⅜" NIAGARA 1" Gap Holddown

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3 phase—60 cycle

SLIP RING

Qu.	H.P.	Make	Type	Volts	Speed
1	1750	G.E.	M-579B8	4800	1800
1	1500	G.E.	MT	6600	1187
1	800	Whse.	CW	550	1774
1	700	A.C.		2300	500
1	600	Whse.	CW-4-32D-15	440	1778
1	500	G.E.	MT-413	2200	439
1	500	Whse.	CW	550	358
1	350	Cr. Wh.	Size 718R	208/416	1765
1	350	G.E.	IM-17A	220/440	720
1	350	Whse.	CW-10-39C-15	440	720
1	250	G.E.	IM-16	220/440	875
1	250	G.E.	MT548Y	220/440	875
1	250	A.C.	Any	550	600
1	250	Whse.	CW	2200	450
1	250	Cr. Wh.	Size 29Q	2300	350
1	250	G.E.	MT-424Y	4600	257
1	200	G.E.	IE-13B	220	1800
2	200	Whse.	CW-890	2300	1775
1	200	Whse.	CW-874D	220/440	885
1	200	Cr. Wh.	SR-26QB	440	505
2	200	G.E.	IM-17A	2200	435
3	100	A.C.		440	695

SQUIRREL CAGE

1	800	G.E.	KT-573	2200	1180
1	500	G.E.	FT-559AY	2200	3600
2	500	Whse.	CS-1115	2300	863/445
4	500	Whse.	CS-1216	2200	500
1	400	Whse.	CS-7151-810H	6600/4000	3585
1	300	Whse.	CS-1902	2383/448	600
2	200	Whse.	CS-8558 D.P.	220/440	1750
1	150	G.E.	IK-15	2200	860
1	150	G.E.	FT-559	2200	875
1	150	Whse.	CS	440	580
1	125	Whse.	CS-764C	220/440	1160
3	100	Whse.	CS-760C	2200/440	1100

SYNCHRONOUS

1	6000	G.E.	ATI .8 P.F.	2200/6600	600
1	3500	G.E.	TS-1.0 P.F.	4600/2300/4000	360
1	2500	Whse.	.8P.F.	2300	720
1	2000	G.E.	ATI	2300	900
2	1750	G.E.	ATI	2300	3600
1	1750	G.E.	TS	2300/4600	900
1	735	G.E.	ATI	2200/1200	600
2	700	G.E.	TS .8P.F.	2200	1200
1	200	G.E.	IM	440/2200	580
1	350	Whse.	1.0P.F.	440	900
2	350	G.E.	ATI 1.0P.F.	2300	150
1	225	G.E.	ATI 1.0P.F.	440	1800
1	225	G.E.	ATI 1.0P.F.	440	1800

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7½" National air clutch, 1944

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90 ton No. 75 Bliss horning
106 ton No. 56 Toledo s.s.c. trim side shear
126 ton No. 56½ Toledo s.s. air clutch, 1942
370 ton No. 185 Cleveland s.s.c.
600 ton No. 644 Toledo knuckle coining

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No. 18 Kane & Roach straightening roll, 2½"

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PUNCH & SHEAR. 38" throat new Doty
MILLER. 42" x 42" x 18' Ingersoll, adj. rail
LATHE. 90" Betts-Bridgeford headstock, 1941
SAW. 10½" x 10½" No. 3 Motch & Merry-weather, hydraulic, 9 feeds, late
COIL CRADLE. Cleveland uncoilers, 72" wide

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No. 33H Sundstrand Trimplex Rigidmill, m.d.
No. 3A Sundstrand Plain Automatic Rigidmill, m.d.
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56-96 Cincinnati Plain Hydromatic, m.d. in base, 1944
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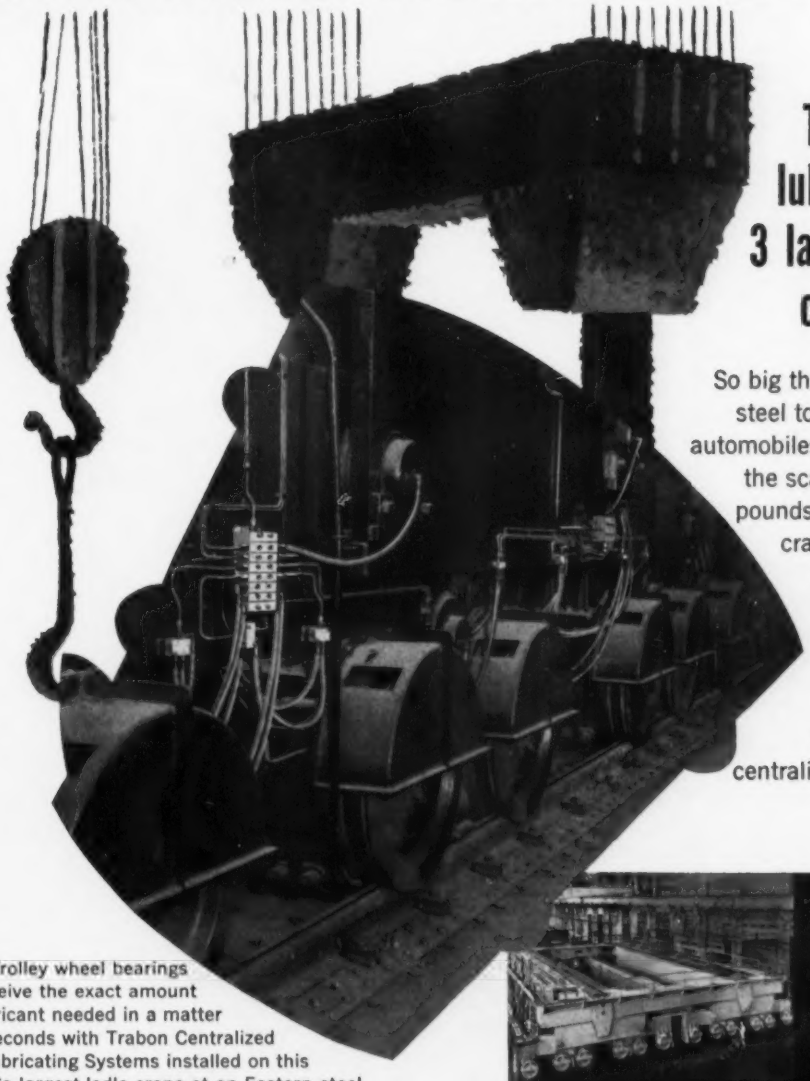

Trabon lubricates world's 3 largest ladle cranes

So big they carry enough molten steel to make 750 complete automobiles. So huge they tip the scales at nearly 6 million pounds. Yes, 3 Morgan 500-ton cranes are now doing a gargantuan job at a famous Eastern steel plant. And all three cranes and their 1476 vital bearings are protected by Trabon centralized lubricating systems.

Trolley wheel bearings receive the exact amount of lubricant needed in a matter of seconds with Trabon Centralized Lubricating Systems installed on this world's largest ladle crane at an Eastern steel plant. Close up shows Trabon feeder valves which operate on the positive progression principle — most practical and foolproof method yet devised for lubricating rugged industrial equipment.

One of the three giant Morgan ladle cranes prior to being outfitted with Trabon Centralized Lubricating Systems. Note immensity of the lubricating job if it had to be done manually.

Trabon automatic lubricant pump, two feeders and lubricant lines. Note cam in right foreground which automatically starts the lubricating cycle while crane is in operation. No auxiliary machinery is necessary. Trabon is easily and economically installed on hydraulic, mechanical, electric motorized and pneumatic equipment.

Trabon

Trabon Engineering Corporation

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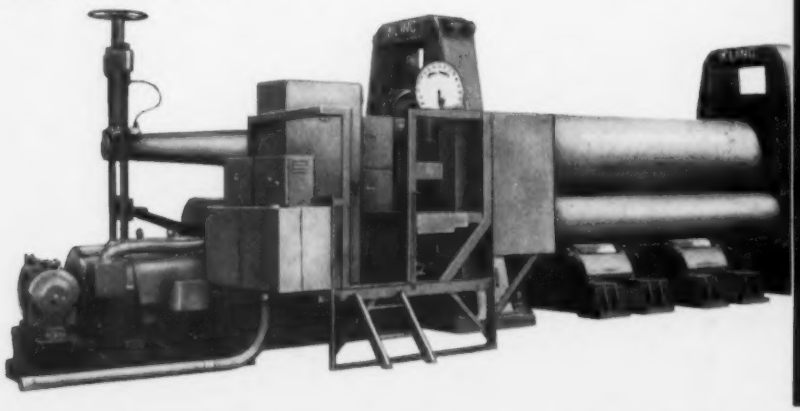
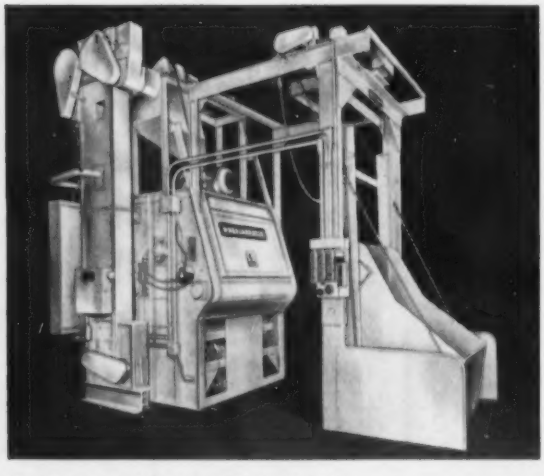


American Machine & Foundry Company's Glen Mixer, used by the baking and pharmaceutical industries for mixing large batches, features Cutler-Hammer Motor Control.



The Wheelabrator Corporation's 14 cubic foot Super Tumblast abrasive blast cleaner uses Cutler-Hammer Motor Control as standard original equipment.

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